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ORIGINAL CONTRIBUTIONS

F	AGE.
On Amaurotic Family Idiocy. A Disease Chiefly of the Gray	
Matter of the Central Nervous System. By B. Sachs	1
The Postero-Lateral Scleroses. By Charles W. Burr and D.	
J. McCarthy	14
Paralysis of All Four Limbs and of One Side of the Face,	
with Dissociation of Sensation, Developing in a Few	
Hours and Resulting from Meningo-Myeloencephalitis.	
By Charles K. Mills and William G. Spiller	30
A Case of Colloid Disease of the Blood Vessels of the Spinal	
Cord. By F. X. Dercum	65
Arterio-sclerosis of the Spinal Cord. By William Hirsch	74
The Microscopical Findings in Four Gasserian Ganglia Re-	
moved for Trigeminal Neuralgia, with Résumé of Two	
Previously Examined. By Sidney I. Schwab	88
Report of Two Cases of Bullet Injuries to the Left Lateral	
Half of the Upper Portion of the Spinal Cord. By J. T.	
Eskridge and Edmund J. A. Rogers	129
A Study of Sensations in Motor Paralysis of Cerebral Origin	
Based upon Thirty-five Cases. By Alfred Gordon	144
Report of a Case of Familiar Tremor of the Head. By John	- =0
K. Mitchell	158
Words Lip Whispering of the Income Sudden Englance	
Words, Lip Whispering of the Insane, Sudden Failures of Volition, Repetition Impulses. By S. Weir Mitchell.	TOO
A Case of Multiple Fibromata Confined to the Internal Plan-	193
tar Nerve. By William J. Taylor and William G. Spiller	201
A Case of Myasthenia Gravis Complicated by Angioneurotic	204
Edema By Theodore Diller	210
Edema. By Theodore Diller	
States. By William A. White	257
The Changes Found in the Central Nervous System in a Case	
of Rabies with Acute Mental Disturbance. By Charles	
Lewis Allen	280
Psychomotor Hallucination and Double Personality in a Case	
of Paranoia. By William Pickett	285
Presidential Address Before the American Neurological As-	
sociation. By J. W. Putnam	321
Tabes and Muscular Atrophy. By Joseph Collins	324
Contribution to the Study of the Achilles-Jerk and the Front-	
Tap. By G. L. Walton and W. E. Paul.	341
Three Cases of Progressive Muscular Dystrophy Occurring	
in the Male Members of a Single Family and Commenc-	250
ing at the Same Age in Each. By C. H. Bunting	350

P	AGE.
Remarks on Primary Neurotic Atrophy (Charcot-Marie-Hoffman Type), with Report of a Case in Which there Was Excessive Indulgence in Tea and Coffee. By	
Alfred Gordon A Case of Progressive Developing Hemiplegia, Later Becoming Triplegia, Resulting from Primary Degeneration	354
of the Pyramidal Tracts. By Charles K. Mills and Wm.	
G. Spiller The Results of Surgical Treatment of Brain Tumors. By	385
M. Allen Starr	398
(Friedreich's Type). By J. Ramsay Hunt Myoclonus Multiplex and the Myoclonias; Report of Cases	408
and an Attempt at Classification. By Charles L. Dana Chronic Progressive Hemiplegias, with Remarks on Two	449
Cases of Unilateral Paralysis Agitans without Tremor. By Hugh T. Patrick	469
Ely Jelliffe and L. Pierce Clark	482
Gigantism and Leontiasis Ossea, with Report of the Case of the Giant Wilkins. By Peter Bassoe513,	595
Studies upon the Cerebral Cortex in the Normal Human Brain and in Dementia Paralysis. By G. Alfred Law-	- 131
rence	854
Philip Zenner	555
of Intermittent Melancholia. By Alfred Gordon The Sign of the Orbicularis in Peripheral Facial Paralysis.	558
By George W. Jacoby	585
by Operation. By James I. Putnam and I. W. Elliott	665
A Method for the Relief of Pain in Tumor of the Brain. By William Browning	677
William Browning	
enburg Enormous Tumor of the Postero-Parietal Region Weighing	681
Over Half a Pound; Absence of Localizing Symptoms Until Late in the History of the Case; Operation; Death.	
By F. X. Dercum and W. W. Keen	737

INDEX TO SUBJECTS

Figures in parenthesis () indicate discussions. Figures with asterisk* indicate original articles and are accompanied with title. Figures unaccentuated, accompanied with title, indicate abstracts.

PAGE	PAGE
Abscess-Brain, 507, 569; Diag-	Astasia-Abasis 42
nosed as Brain Tumor373	Astereognosis, Bibliography, Jan.
Adiposis Dolorosa, Bibliography,	Ataxia—Cerebral and Cerebro-Spi-
April.	nal, 579; Locomotor, Involun-
Achilles-Jerk and Front Tap*341	tary Movements in, 309; Mas-
Acrocyanosis, Chronic Hypertro-	sage in Locomotor, 506; Tabe-
phic649	tics, Re-education in232
Acromegaly 53	Atrophy—Myopathic, 651; of Cer-
Acroparesthesia after Traumatism 123	ebellum, Histology in, 182; Pro-
Adiposis Dolorosa253	pressive Muscular, 57; Primary
Agraphia, Isolated576	Neurotic, *354, (370); Sclero-
Alcoholism—Bibliography, April;	tic, of Cerebrum and Cerebellum,
Central Cell Changes in, 306;	53; Tabes and Muscular*324
Testimony and	Autogenetic Regeneration167
Allgemeine Zeitschrift für Psychi-	Auditory, Tract, Upper502
atrie442	Bacterial Disease, Bibliography, Feb.
Amnesia, Double Consciousness in 221	Basedow's Disease—291; Electri-
Amaurotic Family Idiocy*I	cal Treatment of, 55; Thymus
Amyotrophic Lateral Sclerosis	in, 440; Treatment, 184439
217, 221, 725	Babinski Reflex,230, 303
Amyotrophy, Peroneal Form of	Beitraege zür psychiatrischen
Charcot-Marie 47	Klinik239
American Journal of Insanity	Blood—from Clinical Aspect, 58;
	in Certain Cutaneous and Nerv-
American Neurological Associa-	ous Diseases, 58; Vessels of Spi-
tion*321	nal Cord, Colloid Disease of*65
Anatomy, Bibliography, Jan.	Brachial Paralysis662
Anemia, Changes in Spinal Cord	Brachial Plexus, Uniradicular Pal-
in223, 313 Angio-Neurotic Edema—249; and	sies of 52
Myasthenia Gravis*210	Brain51, 304, 499
Antero-lateral Tracts, Degenera-	Brain Abscess—373, 569; Atro-
tion of164	phine Poisoning, 122; Abscesses,
Aphasia—164, 722, 723, 724; Her-	Diagnosis of, 507; Gumma of,
editary, 306; Subcortical Sen-	222; Trauma(161)
sory, 163; Uremic, 120; Biblio-	Brain Tumor—221, 227; Biblio-
graphy, May.	graphy, Jan., Feb.; and Tendon
Archives de Neurologie, 53, 175,	Reflexes, 303; Diagnosis of, 315;
230, 433, 656719	and Hydrocephalus, 165; Relief in, *677; Surgical Treatment,
230, 433, 656719 Archives d'Electricite Medicale,	
55(437)	*398; Trephining for250
Archives für Psychiatrie und Ner-	Brain Syphilis, Malignant572
venkrankheiten724	Bromide Action 47
Archives für kriminal Anthropolo-	Bulbar Palsy42, 430
gie717	Brown-Sequard Paralysis226
Arterio-sclerosis of Spinal Cord—	Cauda Equina—Affections of, 180;
*74; Pathological Anatomy of .308	Lesion of, 376; Tumor of377

PAGE	PAGE
Cancer, Polyneural Complications	Delusion—Impulsive Insanity and
in Bronchial 51	Moral Idiocy, 247; and Obses-
in Bronchial 51 Centralblatt für Nervenheilkunde	sions231
und Psychiatrie493	sions
Cerebellar Tumor426, 427	Dementia—Cerebral Syphilis and
Cerebellum and Cerebrum—Scler-	Cranial Nerve Degeneration,
	106; Character in, 241; Paraly-
otic Atrophy of, 53; Arrested	tica, Cerebral Cortex in, *533,
Development of, 500; Histology	*600 *600 Dragor Tot 170
in Atrophy of182	*630, *684; Præcox, 121, 172,
Cerebral and Cerebro-spinal	373, 440, 725; Senile, 491; Se-
Ataxia, 579; Cortex, Studies	nility and Senile 50; Biblio-
Cerebral and Cerebro-spinal Ataxia, 579; Cortex, Studies upon, *533, *630, *684; Dura,	graphy, Aug.
Spindle-Cell Sarcoma of, 427;	Deutsche Zeitschrift für Nerven-
Hemianesthesia, 166; Hemiple-	heilkunde162, 226
gia, Infantile, 360; Hemorrhage,	Diphtheria Bacillus, Action of
Bibliography, Feb.; Inhibition,	Ozone on439
437; Syphilis, Dementia with	Diplegia, Peripheral Facial572
Nuclear Degeneration of Cranial	Disseminated Sclerosis in Scotland
Nerves, 106; Tumors, Mental	and AmericaIII
State in504	Dolorific Assymetry654
Cerebritis, Non-Septic361	Drunkenness302
	Destrocker Progressive Muscu-
Cerebro-spinal Fluid, Escape of	Dystrophy, Progressive Muscular*350
through Nose	Til American Francisco
Chicago Neurological Society. 105, 298	Electrical—Anesthesia in Excision
Children, Development and Care	of Hemorrhoids, 437; Currents;
of	Action of Continuous, 56;
Chorea—Huntington's, 172, 295,	Deaths by, 437; Intensity of438
725; in Pregnancy, 735; Minor,	Electrical—Stimulation, Intra-ra-
725; Pathological Anatomy, 307;	chidian, 438; Treatment of Base-
Senile, (160); Bibliography, Jan.	dow's Disease 55
Choreic Tic	Electricity-437, 438; in Facial
Clonus, Triceps, Biceps and Fin-	Neuralgia657
ger*681	Electro-diagnosis, State of 56
Conceptions, Imperative663	Electrolytic Interrupter 57
Contagion, Follies by433	Elephantiasis Ossium566
Convulsions306	Encephalomyelitis, Disseminated 575
Corneal Depressions 54	Encephalitis and Poliomyelitis244
Cortex—Developmental Areas in,	Encephalus, Bibliography, May.
660; Endocellular Reticulum in,	Endocellular Reticulum in Cortex 112
112; Myelinated Fibers in, 722;	Epileptic—Aura, 664; Criminal
Structure of Human495	Responsibility of, 244; Mania,
Criminal Equivalent of Insanity.118	576; Oscillations in Metabolic
Criminology, Bibliography, Jan., May	Processes of, 115; Was Moham-
Cytology, Bibliography, Jan.	med an168
Daktyloscopie717	Epileptics, Changes in Cerebral
Deformity, Prevention of119	Cortex of
Degenerate—Episodic Syndromes	Epilepsy—244, 652; Alcoholic, 251;
in, 434; Punished by Law498	Blood Changes in Idiopathic,
Degenerates, Bibliography, Feb.	501; Dietetic Treatment, 110;
Degeneration—after Lesions of	Hysteria and, 301; Interpretation
Retina in Monkeys, 304: Nasal	of Rhythm of, 203: Pathology
Stigma of, 441; Nerve Suture	of Rhythm of, 293; Pathology and Treatment, 251; Pathology
and Nerve, 505; of Antero-lat-	of Myoclonus, 234; Psychopath-
eral Tracts, 164; of Lower Neu-	ology and Medico-Legal Rela-
rones, 501; of Motor Tract, 499;	tions, 316; Sensory Excitation
	in 1001 Silont Forms of 216
Stigmata of	in, 439; Silent Forms of, 246;
Delirium, One-sided168	Syphilitic, 110; Treatment of,

252, 253, 654; Bibliography, Feb.,	of St. Theresa, 55; Organic Dis-
Mar., May, Aug.	ease246
Erythromelalgia, Minute Anatomy	Hysterical—Breast, 54; Confusion, 441
of317	Hystero-Syphilis583
Exhibitionists before the Law443	Huntington's Chorea172, 295
Exophthalmic Goiter-291; Elec-	Idiocy—Amaurotic Family, *1; In-
trical Treatment of, 55; Thymus	sanity, Delusions, etc., 247; Mor-
in, 440; Treatment,184, 439	al, 177; Bibliography, Oct., Nov.
Facial-Diplegia, Peripheral, 572;	Il Manicomio113
Hemiatrophy, 640: Neuralgia.	Imbeciles, Insanity in495
Hemiatrophy, 649; Neuralgia, Electricity in, 657; Paralysis,	Imbecility and Asexualism117
Sign of Orbicularis in, *585;	Infanticide by Cold Bath718
Paralysis, Traumatic367, 368	Infantile—Cerebral Hemiplegia,
Facio-scapulo-humeral Hemiatro-	Paralysis, Treatment 55
_ phy583	Influenza, Surgical Importance of . 310
Feeble-Minded, Permanent Care	Inhibition and Hemisection of
of	Cord
Fibromyoma, Treatment of439	Intemperance, Prognosis and
Galvano-Faradisation 55	Therapy of
Gigantism—and Infantilism, 183;	Intracellular Network440
and Leontiasis Ossea*513, *595	Insane—Asylums in Russia, 242;
Galvanism and Muscular Force 57	Auto-Mutilator, 179; Care of,
Ganglion, Subcortical660	728; Care of in Private Homes,
Ganser's Symptom442	498; Criminal, Medico-Legal
Graves' Disease—201: Flectrical	Phrase of Vermont Observation
Graves' Disease—291; Electrical Treatment of, 55; Treatment,	Law for, 174; Dermatoses of,
184, 439	373; Family Care of, 237; Hos-
Hallucinations499	pitals, Nurses in, 236; in Bra-
Head, Extensive Injury to729	zil, 372; in General Hospitals,
Heart—Area, Measurement of,	Treatment of, 170; in Italy, 574;
437; Inhibitory Fibers of503	Influence of Rational Conversa-
Hedonal, Action of, on Animal	tion on, 175; Lip Whisperings
	of, *193; Outdoor Exercise for,
Economy441 Hemianesthesia, Cerebral166	729; Pathological Anatomy of,
Hemiatrophy, Facial649	113; Sanitation in Asylums for,
Hemiplegia—Chronic Progressive,	237; Suicide Among, 117; Tent
*469; Infantile Cerebral, 360; in	Life for, 729; Toxicity of Blood
Plumbism and 'Nephritis, 430;	in, 573; Tuberculous, Tent Life
Progressively Developing, *385;	for238
Sweating on Palsied Side in,	Insanities, Periodic491, *558
296; and Tabes325	Insanity—Blood in Manic-Depres-
Hemiplegics, Flank Gait in441	
Hemisection of Cord and Inhibi-	sive, 726; Circular, 653; Communicated and Simultaneous,
, •	176; Criminal Equivalent of,
Hemorrhagic Pachymeningitis, 51,312	118; Criteria of, 170; Delusions
Hereditary Family Spastic Paraly-	
sis spastic Talaly-	and Moral Idiocy, 247; from Hashheesh, 496; Hydriatic Pro-
sis	cedures in Treatment of, 173; in
in General	Imbeciles, 495; Induced, 442;
Hydrocephalus and Brain Tumors,165	in United States, *257; Litigious,
Hyoscine hydrobromate303	
Hyperesthesia of Nails576	237; Pathogenesis of Diabetic,
Hypnotics and their Diseases505	170; Pathology of, 52, 169; Post-
Hypochondriasis, Conception of42	Operative, 59; Puerperal, 727;
Hysteria—after Traumatism and	School Life and, 119; Studies in
Organic Nervous Disease 1221	Manic-Depressive, 51; Surgical Treatment, 170; Sympathetic239
Organic Nervous Disease, 123;	Technicity, 170, Sympathetic. 239
Epilepsy and, 301; Major, 235;	Isthmostriatic Tract574

PAGE	PAGE
Journal de Neurologie439, 583, 652	ses, Bibliography, March, July,
Journal of Mental Science. 169, 495	Nov.; Paralysis of Cerebral Ori-
Katatonia166	gin, Sensations in, *144; Tract,
Katatonic Symptom Picture492	Primary Degeneration of499
Landry's Paralysis, Bibliography,	Multiple-Births, 243; Neuritis 361
May.	Multiple Sclerosis—583; Congeni-
Larynx, Innervation of Muscles of 376	tal, 215; Diagnosis of, 249; and
Lead Palsy	Transverse Myelitis579
Legal Science in Greenland719	Muscle Tonus and Tendon Phe-
Le Nevraxe112, 376, 502	nomena428
Lesion of Red Nucleus650	Muscular Atrophy—Progressive.
Locomotor Ataxia—See Tabes.	Muscular Atrophy—Progressive, 58; and Tabes*324 Muscular Regression, Sarcolysis
Lunacy and the Law499	Muscular Regression Sarcolysis
Macrodactyly640	in
Mania—Blood in Acute Contin-	Muscular Dystrophy, Progresive.*350
uous, 497; Epileptic, 576; Study	Myasthenia Gravis—247, 506; and
of 719; Depressive Insanity 51	Angio-neurotic Edema*210
Medical Graphology653	Myelitis—Multiple Sclerosis and
Medico-Legal Experts, Hospital	Transverse, 579; Pathology of
Physicians as, 167; Phrase of	So called Acute 52
Vermont Observation Law for	So-called Acute 53
	Myelorrhaphy followed by Return
Criminal Insane	of Function124
Medico-Psychological Statistics170	Myoclonia—and Allied Diseases,
	308; Family and Congenital229
Melancholia—Intermittent, 491,	Myoclonus—360; Epilepsy, Path-
*558; Terminal Diseases in172	ology of, 234; Multiplex, 364, *408
Meningocele, Specimen of100	Myoclonus Multiplex and Myoclo-
Meningomyelitis. Suspension and	nias*449
Corsets in Chronic120	Myokymia
Meningitis—Cystic, 582; Effect of	Myotonia and Tetany in Infancy. 122
Streptococcus on Cortical Nerve	Myotonic Pupillary Movements
Cell in, 664; Psychogenic Pseu-	Myotonic Slowness166, 167
do-, 162; Pneumococcus, Simu-	Myxedema. Bibliography, June.
lating Puerperal Eclampsia, 58;	Nerve Anastomosis in Anterior
Tuberculous, 430; Without Ana-	Poliomyelitis369
tomical Lesions743	Nerve Cells—Activity of Central,
Mental and Nervous Disorders,	575; in Cord of Higher Verte-
Mode of Living and	brates, Prolongations of, 113;
Mental Disease—Alkalinity of	in Horn of Spinal Cord, 183;
Blood in, 496; Hair in, 575; He-	Pathological. Anatomy of240
redity of, 313; Sensory Percep-	Nerve—Centers, Syphilitic Lesions
tion in	of, 181; Degeneration in Gene-
Mental—Disturbance during Puer-	ral Paralysis, 372; Plexus and
perium, 58; Health and Urban	Nerve Trunk Paralysis, 167;
Selection, 248, 253; Pathology,	Suture and Nerve Degeneration,
Obsessions in, 178; State in	505; Suture of Popliteal, 565;
Cerebral Tumors, 504; Status of	Tracts and Skin Reflexes577
Czolgosz, 236; Symptoms and	Nerves in Man, Excitation of
Bodily Disease	Bared 56
Migraine574	Nervous—and Cutaneous Diseases,
Monatschrift für Psychiatrie und	Blood in Certain, 58; and Men-
Neurologie301, 576, 722	tal Disorders, Mode of Living
Monoplegia, Brachial432, 490	and, 662; Disease, Arterio-Scler-
Motor—Accompaniments of Psy-	osi as Cause of, 733; Diseases,
chical States, Measurement of,	Clinic on, 185; How Not to Be,
239; Apraxia, 166; Cortex, 375;	315; Syphilis, Pathology of .228
Neurone in Tabes, 241; Neuro-	Nervous System—Consciousness

PAGE	PAG
and, 186; in Rabies, Changes in	662; Brown - Sequard, 226;
and, 186; in Rabies, Changes in Central, *280, (366); Stimulus	from Creosote Phosphate, 494;
in Repair and Decay of170	General, Tabes and Charcot's
Neuralgia—Electricity in Facial,	Joint, 107; Hereditary and Fam-
657; Trigeminal, Microscopical	ily Spastic, 229; Infantile,
Findings in Gasserian Ganglia	Treatment, 55; Motor, of Cerebral Origin, Sensations in,
Removed for, *88; Cell and Its	bral Origin, Sensations in,
Processes, 170; Structure of,	*144; Nerve Degeneration in
298; Tissue, Mesoblastic Origin	General, 372; Nerve Plexus and
of298	Nerve Trunk, 167; of all Four
Neurological Dispensary Clinic,	
Wedlological Dispensary Chine,	Limbs and One Side of Face,
Work of*482	*30; of Peroneus, 722; of Ton-
Neurologisches Centralblatt	gue, Bilateral Atrophic, 584;
Neurones, Toxic Degeneration of	Peripheral Facial, *585; Traumatic Facial367, 368
Neurones, Toxic Degeneration of	matic Facial
Lower501	Paranoia, Psychomotor Hallucin-
Neuroses—Cardiac, 570; of An-	ation in*285
guish, 719; Telegraphers726	Paraplegia—and Recklinghausen's
Manual Discounting	Disasser S
Neurotic Atrophy, Primary	Disease, 310; Spastic292
Neurotonic Pupil Reactions661	Paretics, Fundus of Eye in230
Neurotonic Pupil Reactions661	Paresis—53, 220, 374; Compara-
Neuritis-from Whooping Cough,	tive Frequency of, 49; Early Di-
663; Multiple, 360; Biblography,	agnosis of, 48; Etiology of, 47;
April, July, Nov.	Treatment of
Now Vorla Nourologian! Society	Parkinson's Disease and Vertebral
New York Neurological Society,	
291, 360, 425, 565	Column 45
Nouvelle Iconographie de la Sal-	Patellar Reflex in Pneumonia in
pêtrière45, 180, 649	Children243
Nucleus in the Formatio110	Pathogenesis of Fundamental De-
Nurses, Training of496	lusional Ideas
Obsessions—220; Delusions and,	Pathology-of Insanity, 169; of
221: Fixed Ideas etc. 185: Im	Nervous Syphilis, 228; Obses-
231; Fixed Ideas, etc., 185; Im-	sions in Montal 720, Obses-
pulsions and, 434; in Mental	sions in Mental, 178; of So-
Pathology, 178; Morbid504	Called Acute Myelitis, 53; of
Occipito-Cerebellar Syndrome439	Tabes, 252; and Treatment of
Oculomotor Nerve-Origin and	Epilepsy25
Course of, 576; in Mid-Brain	Pathological Anatomy of Chorea
Origin of303	Minor, 307; of Insane, 113; of
Oculomotor Nuclei301	Nerve Cells, 240; of Spinal
Ophthalmonlagia Interna Trace	Cord Cons, 240, or Spinar
Ophthalmoplegia Interna Trau-	Cord493
matica493	Periscope, 45, 110, 162, 226, 301,
Osteosarcoma of Spinal Column 99	372, 433, 492, 570, 649,736
Pachymeningitis — Hemorrhagic,	Philadelphia Neurological Society,
Surgical Treatment of, 312;	42, 160, 220, 295, 366, 430, 489
Internal Spinal, 306; Internal	Phthisis, Treatment by Urea490
Hemorrhagic, 51	Physio-psychology-among Relig-
Pain	ious Orders, 721; of Women in
Pollic tostal System of Eibana soo	
Pallio-tectal System of Fibers500	Religious Orders656
Palsy—Birth, 565; Bulbar, 42;	Plantar Nerve, Multiple Fibroma-
Lead, 107; Progressive Bulbar.430	ta of*202
Palsies of Brachial Plexus, Uni-	Poliomyelitis-Chronic, 440; in
radicular 52	Adult, 489; Encephalitis and,
Panatrophy, localIII	244; Epidemic, 123; Nerve Ana-
Paralytic Dementia, Cerebral Cor-	stomosis in Anterior, 369; Sub-
tex in *522 *620 *684	
tex in*533, *630, *684 Paralysis—Agitans, *469, 566,	Polymeuritic Psychosis
Tararysis—Agrians, "409, 500,	Polyneuritic Psychosis
(567); Arsenical, 166; Brachial,	Polyneuritis, Tuberculous652

viii INDEX.

PAGE	PAGE
Posterior Column 'Nuclei, Central	Scieroderma with Vascular Spasm
Tracts ofII2	of Tongue215
Progressive Spinal Muscular	Sclerosis-Amyotrophic Lateral,
Atrophy 57	215, 221, 725; Congenital Multi-
	ple, 215; Disseminated in Scot-
Protoplastic Prolongations, Form	lead and America TYTE Multi
and Development of502	land and America, III; Multi-
Psychiatrische Neurologische Wochenschrift167, 577, 654	ple, 249, 583; of Occipital Lobe,
Wechenschrift167, 577, 654	651; Postero-lateral, *14; Trans-
Psychiatric Knowledge, Limits of .492	verse Myelitis and Multiple579
Psychiatry—German Association	Sclerotic Atrophy of Cerebrum
	and Cerebellum 53
for, 734; in General Hospitals,	
III; Medical Experts in, 717;	Senility and Senile Dementia 50
Psychology and, 241; Progress	Signs of Death by Hanging718
of727	Skull Capacity723
Psychic and Organic States, Cor-	Sleep, Production of 57
relation between571	Spasmodic—Torticollis, 45; Wry-
Psychogenic Pseudo-Meningitis162	Neck247
Psychomotor Hallucination in	Spinal Canal, Abnormal Develop-
D	
Paranoia*285	mental
Psychopathic and Neuropathic,	Spinal Cord—Arterio-sclerosis of,
Hospitals for	*74; Bullet Injuries of, *129;
Psychopathic Processes, Basic Un-	Changes in Anemia, 223, 313;
ity of	Conductivity of Anemic, 305;
Psychopathology, Tests in503	Colloid Disease of Blood Ves-
Psycho-physiology of Negativism.493	sels of, *65; Disorders, X-rays
Psychoses—Elimination of Indi-	in, 725; Lesions, Traumatic,
can, Acetone and Diacetic Acid	(160); Nerve Cells in Horn of,
in Various, 50; Polyneuritic,	183; Pathological Anatomy, 493;
116; Hydrotherapy of, 494; Ty-	Sarcoma of, 731; Stab Wound
phoid	of, 226; Tuberculous Tumor of 52
Ptosis, Relapsing Bilateral581	Spinal Cord Tumor, 101, 102, 110,
Pupillary—Changes, 661; Para-	578, *665, 732; Laminectomy for, 99
doxical Phenomenon167	Spinal Muscular Atrophy 57
Rabies, Central Nervous System,	Spinal Roots, Crushing661
Changes in, *280, (366); Modi-	Subcortical Tumor, Operation100
_ fied240	Superstition: Fortune Telling and
Ravnaud's Disease184	
Reflex-Achilles, and Tabes, 110;	Quackery
Acromial, 659; Babinski, 303;	Syphilis—Brain, Malignant, 572;
Carpo-metacarpal, 659; Convul-	Cerebral, 106; Pathology of
cione in Crowing Power and	Names and Tander
sions in Growing Boys and	Nervous, 228; Tardy651
Girls, 243; Infraspinatus, 111;	Syphilitic Epilepsy, 110; Lesions
Lumbo-Femoral, 110; Patellar,	of Nerve Centers, 181; Tabes
654; Supra-orbital	Dorsalis, Hereditary186
Reflexes—in Diabetes, 570; Nerve	Syringomyelia-650; Birth Palsy,
Tracts and Skin, 577; Physiolo-	565; Traumatic(160), 661
gy of Tendon, 659; Some New.295	Tabes—and Achilles Reflex, 110;
Parious of Nourology and Des	
Review of Neurology and Psy-	General Paralysis and Charcot's
chiatryIII	Joint, 107; Hemiplegia and, 325;
Revue de Psychiatrie et de Psy-	Hereditary Syphilitic, 186; In-
chologie Experimentale503	cipient, 652; Involuntary Move-
Revue Neurologique 51	ments in, 309; Massage in, 506;
Rivista Sperimentale di Frenia-	Marital Relation and, 734; Mo-
tria sperimentare ai Frena.	
tria	tor Neurone in, 241; Muscular
Sarcoma of Cerebral Dura, 427;	Atrophy and, *324; Pathology of,
of Pia Mater, 164; of Spinal	252; Root and Cell Lesions of,
Cord	46; Bibliography, June, Oct.

PAGE	PAGE
Tabetic Arthropathy652	für Praktiker and Studirende128
Tabetics—Massage for, 252; Re-	Deaver, John B. A Treatise on
education in Ataxia of232	Human Anatomy in Its Applica-
Tendon Transplantation228	tion to the Practice of Medicine
Terminal Phalanges of Hands,	and Surgery508
Peculiar Affection of291	Diehl, A. Zum Studium Merkfah-
Tetany and Myotonia in Infancy. 122	
Thomsen's Disease and Pseudo-	Dunglison, Robley. A Dictionary
	of Medical Science
Muscular Hypertrophy490	of Medical Science736
Tic-Douloureux312, 653	Flatau, E. Handibuch der Path-
Torticollis, Spasmodic 45	ologischen Anatomie des Ner-
Traumatic Neuroses, Bibliogra-	vensystem 7
phy, Aug.	Gould, George M. The American
Tremor of the Head, Familial. *158	Year-Book of Medicine and
Trophedema, Chronic649	Surgery128
Tuberculous Disease of Pons310	Surgery128 Marburg, Otto. Mikroskopisch-
Tumor—Brain, 221, 374; Tendon	Topographischer Atlas des Men-
Reflexes and303	schlichen Zentralnervensystems
Turner Comballar 406	
Tumor—Cerebellar, 426, 427; Cerebral, Mental State in, 504;	mit Begleitendem Texte736
Cerebral, Mental State in, 504;	Mattison, J. B. The Mattison
of Cauda Equina, 377; Formation in Region of Coccyx, 100;	Method in Morphinism128
tion in Region of Coccyx, 100;	Meige, H. Les Tics et leus Trait-
Subcortical, Operation100	ment 189
Tumors of Brain, 227; Diagnosis	ment
of, 315; and Hydrocephalus, 165;	Krankheit-Geschlecht und En-
Relief in. *677: Surgical Treat-	
Relief in, *677; Surgical Treatment of *398; Trephining for250	Ninth Annual Report of the Board
Tumors—Frontal Lobe, 580; Me-	of Managers of the Craig Col-
tastatic Adrenal, in Mid-Front-	ony for Epileptics129
al Convolution375	Obersteiner, H. Arbiten aus dem
Tumor of Postero-Parietal Region.737	Neurologischen Institute an
Tumors, Spinal Cord—101, 102,	der Wiener Universitat129
110, 578, *665, 732; Laminecto-	Oertel, T. E. Medical Micro-
my for, 99; Tubercular 52	scopy'440
my for, 99; Tubercular 52 Ulcer of Foot, Perforating 197	Peterson, F. A Text-Book of Le-
Vertebral Column and Parkinson's	gal Medicine and Toxicology51
Disease 45	Raymond F.—Lecons sur les Mal-
Disease	adies du Systeme Nerveux, 189;
Meditxiny240	Les Obsessions et la Psychas-
Meditxiny240 Xanthelasma, Treatment of 55	
X-Ray Accidents 56	thenie
V David Openity of Anticontic	Sajour, Chas. E. de M. Internal
X-Rays—Opacity of Antiseptic	Secretions and the Principles of
Powders to, 56; Transparency	Medicine44. Schofield, Alfred T. The Force
of Matter to 56	Schoneld, Alfred I. The Force
DOOK DEVIEWS	of Mind or the Mental Factor
BOOK REVIEWS.	in Medicine 62 Sidis, B. Psychopathological Re-
American Year-Book of Medicine	Sidis, B. Psychopathological Re-
and Surgery255	searches 60
and Surgery255 Brower, Daniel R. A Practical	searches
Manual of Insanity for Medical	Text-Book of Physiology379
Students and General Prac-	
titioner 188	Starr, M. Allen. Organic Nerv-
titioner	ous Diseases509
Practical and Clinical 61	Vaschide, N., and Vurpas, C. La
Classanger C V The E-station	Logique Morbide379
Clevenger, S. V. The Evolution of Man and His Mind380	Viannay, Chas. Les Paralysies des
or Man and His Mind380	Marfe Parisharianes et la C
Cohen, S. S. A System of Phys-	Nerfs Peripheriques, et la Sys-
iologic Therapeutics445	tematisation de ces Nerfs 6
Cohn, T. Leitfaden der Elektro-	Ziehen, T. Psychiatrie für
diagnostik und Elektro-Therapie	Aerzte und Studirende 6

Redien enden

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THE

Journal

Nervous and Mental Disease

Original Articles.

ON AMAUROTIC FAMILY IDIOCY. A DISEASE CHIEFLY OF THE GRAY MATTER OF THE CEN-TRAL NERVOUS SYSTEM.1

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The clinical symptoms of amaurotic family idiocy have been described frequently and thoroughly enough. It is gratifying to note that the clinical picture as developed by the present writer a number of years ago has been generally accepted, and has been fully endorsed in the excellent articles by Hirsch, Peterson, Mohr, Patrick, Falkenheim, and a number of others. Two symptoms, in addition to those originally given, have been mentioned by Falkenheim:—"Explosive laughter" and "disturbance of deglutition." The former I have not observed, though I do not doubt its occurrence in some instances, and the latter may be taken to be either an accompaniment of the great mental and physical deterioration, or it may, at times, have the value of a "bulbar" symptom; and "bulbar" symptoms are explained easily enough, in view of our present knowledge of the morbid anatomy of the disease.

While the disease is relatively rare, the records have become so numerous that Falkenheim has been able to analyze 64 cases.* The number is increasing rapidly and mere statistical studies will

¹Read at the annual meeting of the American Neurological Association, June 5, 6, and 7, 1902.

*I have another case under observation at the present time.

soon not be needed. I would urge, however, that the clinical type as now accepted, be not disturbed because of any unusual symptoms, such as were recorded, for instance, in the cases of Claiborne, Kuh and De Bruyn. The last named author has, of his own accord, and justly so, withdrawn his case from this especial type. In the case of Claiborne the condition was complicated by a tubercle of the corpora quadrigemina, and although the characteristic change in the fundus was made out, the patient presented so many unusual features that this record should be utilized, if at all, with great caution. In Kuh's case the clinical picture was obscured and altered by the presence of an hydrocephalus.

The chief interest in the study of amaurotic family idiocy has been shifted from the clinical to the anatomical side. There is, in the main, a fortunate agreement as to the findings. There can be a difference of opinion only with respect to the interpretation to be put upon these findings. Nine years have elapsed since I have had the opportunity of studying carefully the morbid changes in a case that had been under my own observation. Since that time so many new staining methods have been introduced that I was eager to undertake this special study in pathology again, and to determine to what extent conclusions of former years would have to be changed or reinforced. For the opportunity of studying the present case I am greatly indebted to Dr. Sarah Welt, who devoted an unusual amount of time and patience to the care of this child before finally referring it to Mt. Sinai Hospital; and I am also indebted to Dr. Koplik, who, knowing my interest in the subject, was good enough to put this child entirely under my charge. As in all the other cases, the history of this one may be stated briefly:

This child, C. S., born of Hebrew parents, was two years and seven months of age at the time I first saw it at the hospital, in September, 1901. The patient's mother had had three children. The first-born is now six years of age, a fine, healthy-looking child. The second child died at the age of sixteen months. Two months before its death the mother knew that it was blind. It could never sit up straight; never uttered a sound; had no spasms, but was feverish off and on. It was thought to have tubercular meningitis, but in all probability was afflicted with this family disease. Our own patient, the third child, was born about two and one-half years after the second. During pregnancy the mother was nervous, but otherwise well; labor was normal and short. At birth and for

some time afterward the child appeared to be normal; it vomited a great deal, however, and as time passed on it was noticed that it could not sit up straight, nor did it seem to be as bright as other children. The mother thought that the child recognized her when it was somewhere between six and ten months of age, but after this period the vision gradually grew fainter and fainter. At the age of one year the child was practically blind, and since then the general weakness increased. At about this time the typical changes in the region of the macula lutea were made out. At the age of nineteen months it had a vomiting spell with convulsions. In November, 1900, it was afflicted with pneumonia, from which it recovered. but the mother states that thereafter it never moved its extremities except in convulsions. The extreme contractures in the upper and lower extremities which the child presented were developed about February, 1901. The statement was made that these came on quite suddenly after a convulsion, but of this fact we cannot be entirely certain. The child had difficulty in swallowing and was startled by the slightest noise. With the exception of increasing emaciation. the condition remained practically unchanged up to the time of death, on October 16, 1901.

The history as given above is largely based upon the careful observation of Dr. Sarah Welt, and the condition was also carefully studied by me during the four weeks preceding death. In the last two weeks of life the temperatures were often subnormal. To complete the history of the case, it may be added that the mother nursed this child to the age of eleven months. She had nursed the second child to the age of eight months, while the first healthy child was raised on sterilized milk.² While carrying the amaurotic child, the mother felt very little life, and in passing it may be noted that she was distinctly of cachectic build. From the above account of the child's condition it will readily be seen that the diagnosis of amaurotic family idiocy could be made with absolute certainty.

The autopsy was performed ten hours after death, on October 16, 1901, by Dr. Libman, Assistant Pathologist of Mt. Sinai Hospital. To him and to his chief, Dr. Mandelbaum, I am indebted for a full report. We could not get permission to remove the eyes, but with this one exception the study is complete.

Upon removal from the skull the brain weighed 784 grammes; the dura mater was rather firmly adherent to the bones.

²I make mention of these facts in order to do justice to Hirsch's theory. The facts would seem to support his theory, but for reasons to be given later on I cannot accept the same.

The cortex was so firm that the knife grated as it passed through it—a sound which I have not heard under similar conditions since the autopsy on the first subject of this disease. It was noted that the convolutions were small and that there were fissural peculiar-

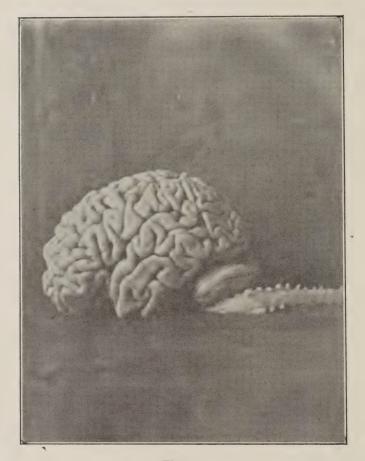


Fig. 1

ities,—indications of a low type of brain, such as I recorded in the very first report made upon this disease, but such changes have not been referred to in the reports of others. In view of the possible developmental character of the disease these structural peculiarities are of some importance. The fluid in the pia was markedly increased in amount. The pituitary body was not enlarged. Of other changes noted at the time I will only refer to an old pleurisy, and to a very advanced parenchymatous myocarditis.

The brain and spinal cord were at once put in formalin and prepared for staining by the various methods now in use. Serial sections have been laid through almost every part of the entire central nervous system. A careful study of these sections shows some deficiency in the development of the cerebral white fibers and also

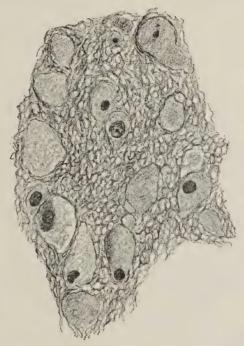


Fig. 2—Section through cortex, showing changed pyramidal cells. Hematoxylin-eosin stain. Oc. 4; obj. 1-12 (Leitz).

a degeneration of the pyramidal tracts in the lateral as well as in the anterior columns of the cord. This same degeneration can be traced through the course of the pyramidal tracts in the internal capsule, crusta, pons and medulla, but much more striking than this change in the white fibers is the change in the gray matter of the central nervous system. The changes are found to be the same in the cortex of the brain, in the cranial nerve nuclei, in the anterior and posterior gray matter from the cervical to the lowest lumbar, and sacral segments of the cord. Even the sacral

ganglia show similar changes. The changes are practically those to which attention was explicitly directed by Dr. Hirsch, and which were found to be similar to those reported by me in the cortex in 1887, and were also found on a reëxamination to be contained in some of the spinal sections of the specimens examined in 1892 from my second case.

Of course these changes are brought out much more beautiful-

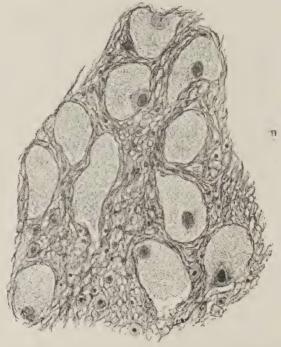


Fig. 3—Section through XII nucleus in medulla oblongata showing advanced changes in ganglion cells. Hematoxylin-eosin stain.

ly by the Nissl and other methods now in use. There is unquestionably some increase of the neuroglia cells throughout the central nervous system, but the chief and most remarkable changes are found in the larger ganglion cells throughout the entire extent of the central nervous axis. In the cortex as well as in the anterior gray matter of the cord there is not a normal ganglion cell to be seen. As will be noted in the specimens and illustrations here-

with presented the cell body is completely altered, the entire cell protoplasm has become disintegrated, leaving a more or less homogeneous mass, the nucleus has been shifted commonly to some part of the periphery of the cell, and instead of being distinctly differentiated from the rest of the cell-body it generally shades off by degrees into this aforesaid homogeneous mass. The nucleus is often wanting entirely, and, in some instances, the entire nucleus appears to have dropped out. The disintegration of the cell-body is so complete that in many specimens the contour alone enables one to infer that these round bodies are the remnants of ganglion



Fig. 4—Section through cervical enlargement showing cell changes in anterior gray matter. (Van Gieson stain.)

cells. These metamorphosed ganglion cells are frequently surrounded by distinct pericellular spaces and are relatively and absolutely so much enlarged that they give a very striking appearance to the cross section.

There is no doubt an entire agreement between the findings in this last case of mine and those so well reported by Dr. Hirsch before this Association a number of years ago. Curiously enough, other recent writers have not been struck by these changes in the gray matter of the brain and spinal cord. In a recent and preliminary report by Prof. Schaffer of Buda-Pest there is the account of a typical case and in the report of the post-mortem findings special stress is laid upon changes of the white fibers and nothing is said

about the gray matter, except that it is entirely normal, and yet, from the cut (Fig. 2) which accompanies his article, although it is reproduced at a low power, I suspect that these same large cell-bodies are present, such as Hirsch and myself have found and described.

The chief inference to be drawn from a study of sections laid through every part of the central nervous system in this and in other cases of amaurotic family idiocy is that the morbid process

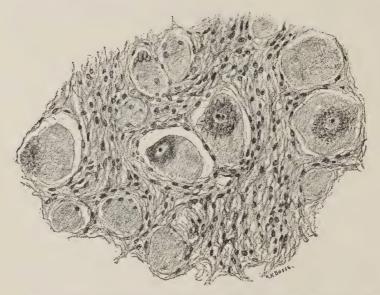


Fig. 5—Section through a lumbar ganglion. Nissl stain showing marked cell changes.

in this disease affects primarily, or at least to a great extent, the entire gray matter of the brain and of the spinal cord. The degeneration of the white fibers of the anterior and lateral pyramidal tracts is in all probability secondary, but not nearly so great or so marked as one would expect with such advanced disease of the ganglionic tissue. It is already probable that the relative involvement of the gray and white matter may vary in different subjects of this disease.

The neurone theory has received so many severe blows of late that the somewhat anomalous condition of affairs as observed in this case need not be especially dilated upon. The theory may have to go to the wall in part or as a whole, but the facts will stand and will call for further elucidation.

In 1887 I spoke of these changes as representing an agenetic condition pure and simple affecting the highest cortical nerve elements. At that time I was not aware of the widespread character of the morbid process. Later researches, and particularly those of Kingdon and Russell and of Hirsch, have laid stress upon the degenerative character of the disease. Much has been made of the fact that the present author has recorded the process as essentially an arrest of development, while the other writers just mentioned have insisted upon the purely degenerative and acquired character of the disease. Some writers have accepted these expressions of opinion as though they indicated a widely differing conception of amaurotic family idiocy, but the difference between the views of the authors just mentioned and of myself is not so great as it would appear at first sight.

A degenerative process does not necessarily represent an acquired or an acute affection. It is my contention now, as in former years, that degeneration will set in whenever normal growth is arrested, but life continues. A child to be afflicted with amaurotic family idiocy is born with a limited and restricted capacity for normal development. Its gray cells may do as well as those of any other child up to the age of two or three or six months, but beyond that its powers for further development will not go. To this extent, in this respect, the disease is after all a congenital affair; when normal development ceases, degeneration sets in.

Gowers has recently written a very helpful article in which he applies a similar course of reasoning to the various scleroses, and has suggested the term "abiotrophy," which I gladly accept, to indicate this arrest of normal development followed by degeneration. The various parts of the nervous system, according to Gowers, have their own vitality. "Some of them may slowly die, while the life of all the rest goes on without impairment. * * * When the failure is early it is due only to a defect which seems to be inherent, the tendency thereto inborn. We do not indeed apply the word 'death' to this slow decay of the elements; we speak of it as 'degeneration'; but the process is in many cases—perhaps in most—an essential failure of vitality." The term "abiotrophy" desig-

nates a lack of vital nutrition, while the term "abiotic" would designate that which depends on defective vitality. Were we to adopt Gowers' phraseology, we might with good reason claim that amaurotic family idiocy is due chiefly to a defective vitality of the gray matter of the central nervous system.

To my mind there is an almost insuperable objection to the doctrine that so distinct a family affection is an acquired disease; yet granting the possibility of this it could only be conceivable upon the further theory of toxic or other influences acting upon the tissues of deficient embryonal potentiality. Hirsch's contention that the toxic influence may have been exerted through the mother's milk cannot be maintained for the simple reason that several of my patients have not been nursed by the mother. Assuming that amaurotic family idiocy may be an acquired disease, the toxic nature of the degenerative process has been argued from the resemblance of the cell pictures to those found in cases of poisonings of various kinds. This point deserves careful consideration, but cannot be decided unless we are certain that the cell changes as we see them represent definite changes due to definite causes.

With the refined staining methods of the day, we have learned much regarding the protoplasmic changes of the cell-body. But I ask, does acute poisoning produce cell changes distinctly different from those of chronic poisoning? Again, can we make out from inspection of the cells whether death was due to metallic poisoning, to acute infectious disease, to a condition of marasmus or what not? For the present it would be hazardous to present such a claim.

It would seem more profitable to attempt to discover other conditions in which cell changes occurred somewhat similar to those made out by Hirsch and myself.

Dr. Spiller reported the case of a boy about nine years of age, the inmate of the Pennsylvania Training School for Feeble-minded Children, who was in all probability afflicted with congenital spastic rigidity and imbecility. This child was seized with symptoms resembling those of cerebro-spinal meningitis from which he died five days after the onset. The microscopical examination of the nervous tissue, Spiller writes, showed little evidence of inflammation.

"I found cell changes in all the cell-bodies of the posterior and anterior horns of the spinal cord; in the nuclei of the cranial nerves; in the sensory as well as the motor nucleus of the fifth nerve; in the cells of Purkinje and in the parietal lobule where especially the cells of Betz were altered. These cell changes were very like those found in amaurotic family idiocy. The gross lesions of meningitis were not found." Spiller seems to interpret these cell changes to be the result of the acute process. I am tempted to question him whether they might not more properly be related to the "chronic spastic rigidity and imbecility." Are we certain enough of these cell changes to claim that they must necessarily be the product of some acute intoxication?

The findings of Rolly in a case of Little's disease (congenital spastic diplegia) are of special interest in this connection. The child was the second of twins, born in the mother's fourteenth confinement. The child was born asphyxiated, and presented all the symptoms of marked spastic rigidity (diplegia), with frequent convulsions. These symptoms continued without much change until death, at the age of about two and one-half months. Rolly lays stress on the specific history of the father, and wishes chiefly to prove the bearing of syphilis upon the etiology of Little's disease. For my present purposes I am interested in his cell findings. Nissl himself having examined Rolly's specimens taken from the spinal cord and from the brain. In the lumbar portion of the cord the author states: "Side by side with cells which present a tolerably normal appearance are others which exhibit a granular disintegration of the Nissl bodies surrounding the nucleus, while the peripheral portions of the cell body remain practically normal." Similar changes were found in the dorsal portion of the cord. In the cervical portion "there are fewer normal cells than in the other divisions of the cord. As a rule, the nucleus cannot be distinctly differentiated from the cell protoplasm. More marked still are the degenerative changes in the brain. There is an enormous and diffuse proliferation of the neuroglia. Some ganglion cells have lost their contours and are more or less shapeless masses, which shade off into the surrounding tissue. Some ganglion cells are so thoroughly disintegrated that one sees practically only lacunæ, which, by their shape, remind one of the ganglion cell form. Small vacuoles were also seen to be present in some of the ganglion cells."

All of these changes bear the closest resemblance to the findings in amaurotic family idiocy. Had this child lived to the age of the amaurotic children previously described, the change would no doubt have been still more striking.

I would also call attention to similar findings in the cases of "generalized rigidity" as described by Collier,³ and in a somewhat similar case reported by Mya and Levi. Whether these latter cases are described as spastic diplegias or as cases of "spastic pseudobulbar paralysis," according to Peritz, the point that is of special interest to us is that very similar anatomical changes have been found in the brains of children who had been afflicted with varying forms of cerebral disease.

Peritz is inclined to the opinion that I have made a special effort to establish amaurotic family idiocy as an entirely independent disease. In this he is mistaken, for I have contended for nothing more than that this family disease represents a distinct and easily recognizable clinical type. This is evident from the fact that in this city not only neurologists, but pediatrists and general practitioners have learned to diagnosticate amaurotic family idiocy with surprising ease on clinical grounds. The disease can be differentiated easily from the other forms of idiocy and from the various types of infantile cerebral palsies. In his earliest publications on this subject the present writer endeavored to show the relationship between amaurotic family idiocy and other congenital cerebral conditions, but he considered it necessary to proceed cautiously before arriving at any definite conclusion. At the present time, however, in view of the researches of Hirsch, Rolly, Spiller, Collier, Peritz, Sachs and others, it may definitely be stated that there is a close anatomical relationship between amaurotic family idiocy and other cerebral diseases of childhood which are dependent on an arrest of, or at least a disturbance in, the normal development of the central nervous system.

I will not as yet claim that the morbid process in all of these children is identical, but it seems to me that the only just inference to be drawn is this, that in amaurotic family idiocy the entire central gray matter is the seat of an intense degeneration, and that somewhat similar changes are found in conditions more or less

⁸Collier calls attention to the resemblance between his anatomical findings and those of amaurotic family idiocy.

closely allied to this special type of family disease. But even if closely allied to other affections, the clinical picture of the type is so distinct that we can well afford to consider it a special clinical form of family disease. Why children of one race should be afflicted so much more often than those of others, when the allied conditions show no such preference, remains as great a puzzle as

We have not yet reached the end of this discussion, and I trust that with every new case carefully reported and carefully studied further light will be thrown upon a disease that appears to me to be of increasingly greater interest. Above all things, I would have future writers on this subject pay the closest attention to the changes in the gray matter of the brain and of the spinal cord.

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THE POSTERO-LATERAL SCLEROSES'.

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We report eight cases of sclerosis of the posterior and lateral columns of the spinal cord, and propose to place them as far as is possible in a classification of combined diseases of the cord. The first four are cases of degeneration of the cord associated with anemia. The history of the first, one in which the anemia was secondary to chronic parenchymatous nephritis, is as follows:

Mrs. G., 46 years old, a widow, was admitted to the Home for Incurables, 7, 26, 'oi. Her father and one brother had died of carcinoma, her mother and two brothers of phthisis. She had never been pregnant. She had had typhoid fever with pneumonia eight years before. Except for this illness her health had been good. Four years before her admission to the Home her legs began to be weak, and she could not walk as well in the dark as in the light. After several months of rest she improved sufficiently to return to her work. She remained in fairly good health, but always with some weakness in the legs until last year, since which time she has been growing steadily worse. She now complains of great weakness in the legs, and of a sensation of "misery" in them, but not of pain. She says that at times the legs jerk and twitch.

When she is helped to walk the gait is very ataxic. Static ataxia is also very marked. There is no muscular wasting. All the extremities are weak. There are irregularly-shaped scattered areas of anesthesia on the thighs and legs. Sensation is delayed and often doubled on the feet. The knee-jerks are absent. Sticking either side causes extension of the toes. The reflexes of the arms are normal. The urine contains a

¹Read at the annual meeting of the American Neurological Association, June 5, 6 and 7, 1902.

small quantity of albumin and granular casts. The blood examination showed H. 30 per cent.; R.B.C., 1,280,000. Her condition gradually grew worse. In September of 1901, the kidney trouble became acute, the anemia pernicious in type, and she died of uremia. Just before death the red blood cells numbered 980,000, and the hemoglobin estimation was 28 per cent.

The necropsy revealed chronic parenchymatous nephritis, chronic gastric catarrh, and the usual changes in the bone marrow of the pernicious type of anemia. The brain was macroscopically normal. Slight chromatolysis of Betz's cells was present. The spinal cord showed diffuse degeneration, especially in the posterior and lateral columns in which parts it was associated with much sclerosis.

The cervical cord showed in the posterior columns dense sclerosis resembling secondary ascending degeneration. In the postero-external columns the degeneration was less marked and tended to reticular formation. The lateral columns showed dense sclerosis of the crossed pyramidal, less dense of the cerebellar tracts, and a diffuse degeneration of the antero-lateral and direct pyramidal tracts. In the anterior part of the cord there was a slight marginal sclerosis such as is frequently seen in senile cords. The glial cells around the central canal formed a mass at least twice as large as usual. The anterior horn cells examined by the Nissl method appeared normal, but there was a very large amount of yellow pigment, in some cases filling the entire cell. Examination by the Marchi method showed degeneration, with black clumps and compound granule cells in the posterior and lateral columns. There was well defined degeneration in both the anterior and posterior roots. pigment in the anterior horn cells stained black where treated by this method.

In the dorsal region of the cord the crossed pyramidal and direct cerebellar tracts and the posterior columns, except the root zones, were densely sclerotic. The remainder of the white matter was diffusely degenerated with hollow spaces here and there. The anterior horn cells resembled those in the cervical region. The central canal was packed with and surrounded by a glial formation which also involved both commissures.

In the lumbar cord there was slight sclerosis with hollow spaces in the posterior median columns, and a few hollow spaces in the posterior external columns. There was slight sclerosis of the crossed pyramidal tracts. The remainder of the white matter showed very little change. The proliferation of glial cells around the central canal amounted to a distinct tumor formation, triangular in shape and extending backwards into the posterior columns and laterally into the gray matter of the median portion of the anterior horns.

To sum up: there was diffuse degeneration of the white matter of the cervical and dorsal areas with dense sclerosis of the postero-median columns and crossed pyramidal tracts throughout the cord; degeneration of the anterior and posterior roots, shown by the Marchi method; marked central gliosis most marked in the lumbar and least distinct in the cervical region;

slight marginal sclerosis; no meningeal lesion.

We are enabled to report the second case through the courtesy of Dr. D. J. Milton Miller. The patient, J. L., a woman, sixty years old, complained for two years of numbness and tingling in the hands and forearms especially after they had been in hot or cold water. There was nothing of importance in the family or previous personal history. The clinical course of the disease while the patient was in the hospital was that of pernicious anemia. On admission the blood examination showed 27 per cent. of hemoglobin and 1,000,000 red corpuscles. A short time before death the hemoglobin had increased to 47 per cent. and the red corpuscles to 1,800,000. The reader is referred to Dr. Miller's paper for details of the clinical history. The only nervous symptoms were shooting pains in the legs, a well defined girdle feeling, numbness in the arms and legs, loss of power and impaired sensibility in the right arm and hand, delayed sensation in the legs and the absence of all the reflexes in the legs.

The patient died on January 3, 1902. Examination of the brain revealed only a slight diffuse chromatolysis of the large ganglion cells of the cortex. In the spinal cord sclerosis was well marked in the crossed pryamidal and direct cerebellar tracts, less marked in the antero-lateral and Gowers' tracts. Slight areas of degeneration existed in the direct pyramidal tract and anterior ground bundle. The median portion of each posterior column showed dense sclerosis. The remainder of the posterior columns showed a diffuse sclerosis with a large number of myelinated fibers intact. These fibers were arranged crosswise, some running transversely, others in whorls.

In the dorsal cord the degeneration and sclerosis affected the entire posterior columns except the root zones. A diffuse sclerosis affected the lateral tracts and a number of hollow areas were scattered throughout the rest of the white matter. In the lumbar enlargement the degeneration was confined to the crossed pyramidal tracts, the posterior columns, and indeed all the rest of the cord was normal. The nerve cells throughout the cord contained large quantities of yellow pigment. The vessels of the white and gray matter showed marked hyaline degeneration, the walls being thickened and staining very diffusely. The roots reacted normally to all methods of staining except the Marchi. By it distinct degeneration was shown in the posterior,

and questionable degeneration in the anterior roots. In the cord the sclerotic and degenerated areas contained a large number of black dots and compound granule cells.

To sum up: there was in the cervical and dorsal cord diffuse degeneration throughout the entire white matter, with dense sclerosis in the posterior and lateral columns; in the lumbar cord degeneration with sclerosis confined to the lateral col-

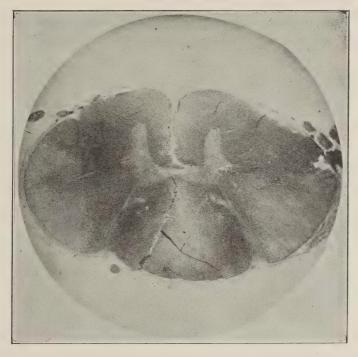


Fig. 1—Diffuse degeneration throughout the section with a secondary type of degeneration in the posterior columns.

umns; hyaline change in the blood vessels, and degeneration of the roots by the Marchi method. (See Fig. 1.)

The history of the third case, a typical example of pernicious anemia, is as follows: The patient, an insurance agent, fifty-six years old, was admitted to Dr. Morris J. Lewis' ward at the Infirmary for Nervous Diseases, complaining of weakness, and with manifest anemia. The family and personal history revealed nothing of importance. He admitted having had gonorrhea, but denied syphilis, and showed no signs of it. The illness for which he came to the hospital had begun two years

before. The first symptom of which he complained was sore mouth and ulceration of the gums. This had lasted many months, but finally healed. In the meanwhile he had been gradually losing strength and he noticed numbness in the hands and feet. More recently pain in the dorsal and cervical spine appeared, and he began to have shortness of breath.

Examination revealed a sallow, poorly-nourished man. There was a little numbness in the arms and legs, but no true anesthesia. The ulnar and musculo-spiral nerves were tender to touch. There was great muscular weakness, but no true palsy. The urine contained neither albumin, sugar, nor casts.

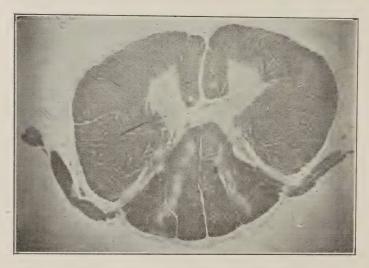


Fig. 2—Photograph showing diffuse degeneration in the posterior columns. This was present in only a small portion of the cord.

The lowest blood count showed hemoglobin 15 per cent.; red corpuscles 532,000; white corpuscles 1,500.

He died on November 23, 1901. The necropsy revealed the changes common in pernicious anemia: orange-colored, subcutaneous fat, red marrow in the long bones, atrophy of the

gastric mucosa, etc.

The spinal cord changes consisted in a U-shaped area of degeneration in the posterior columns, each leg of the U being situated in the postero-external column and extending close to the margin of the cord. (See Fig. 2.) This area of degeneration extended from the fifth cervical to the second dorsal segment. There was very little sclerosis, the degenerated area consisting of a reticular tissue, with degenerated myelin, and, as shown by

the Marchi method, fat globules and compound granule cells along the vessels. The vessel walls and ganglion cells were normal.

The fourth case is that of an English woman, thirty-four years old, who was admitted to the Philadelphia Hospital, January 30, 1901, complaining of loss of power in the legs. She had used alcohol moderately and tea to excess. Neither her history nor physical examination revealed any evidence of syphilis. A year before admission she began to have creeping feelings, and later distinct lancinating pains in the legs. A few months later she began to lose power in the legs, which increased until finally she was chair-ridden. The bladder and rectum

were not affected at any time.

Examination. She was a thin, undersized, weak-looking, pale woman. There was marked loss of power in the legs. She was not able to stand up, indeed she could not lift either leg entirely off the bed. She could flex and extend the knee while the weight of the leg was supported by the heel upon the bed, could move the thigh weakly in any direction, and could flex and extend the ankles and toes. There was not only palsy, but also ataxia in the movements of the legs. The arms were weak but neither paralytic nor ataxic. There was no local muscular wasting, but marked general emaciation. Sensibility to touch and temperature was normal, but on the legs there was some impairment of sensibility to pain. The heart and lungs were normal. The urine contained neither albumin, sugar nor casts. The leg reflexes were absent. The first examination of the blood showed red corpuscles 894,000, white corpuscles 10,-000, and 40 per cent. of hemoglobin. A second examination six weeks later showed red corpuscles 2,780,000; white corpuscles 8,000, and 43 per cent of hemoglobin. The further notes of the case are lost but we can with certainty of correctness state that under treatment with Blaud's pill, Fowler's solution, rest in bed, and feeding she improved so much that she put on weight, improved greatly in color, and walked without any difficulty. The red corpuscle count and percentage of hemoglobin rose quite high, but we cannot give the figures. She was discharged at her own request "feeling very well." The remaining cases were due to causes other than anemia.

Case five, J. P. G., fifty-nine years old, machinist, was admitted to the Philadelphia Hospital, April 24, 1901. He had used alcohol to excess for a long time, and had a chancre when 47 years old. About three years before admission his legs began to feel tired, heavy, and weak, and at the same time or soon after the stiffness, which made it difficult for him to rise, came on. One morning in August of 1900 he awoke and found his legs anesthetic from the hips down and so stiff that he could

not move them. The next day he was able "to hobble around," and in a few days sensibility partially returned. There was for a time a distinct girdle sensation. For a few days before admis-

sion he had some urgency of micturition.

Examination. He was a man of spare build, but showed no local muscular wasting; indeed on account of the constant spasm the legs were proportionately better developed than the arms. Gait was very spastic. There was some true loss of power in the legs, none in the arms. He could not stand with the eyes closed. All the normal reflexes in the legs were exaggerated. The Babinski reflex was present on both sides. Ankle-clonus and rectus-clonus were marked. Rigidity of the legs from spasm was very marked. There was anesthesia to touch in irregularly scattered areas over the trunk and extremities, but sensibility to pain and temperature was normal. There was no ataxia in the arms. There was no nystagmus. Speech was normal. The urine continuously contained albumin and casts.

He died of Bright's disease on June 1, 1901.

The spinal cord presented the following condition: There was degeneration which in the cervical region was differently placed in the upper and lower parts. The second and third cervical segments presented by the Weigert method very marked degeneration in the entire postero-median columns, and quite marked degeneration in the middle part of the postero-external columns. In the fifth, sixth and seventh cervical segments the disease continued distinct in the postero-median columns, but was much less noticeable in the postero-external columns, and also affected the direct and crossed pyramidal and direct cerebellar tracts. At these levels also there was some diffuse degeneration with a tendency to reticular formation throughout the entire white matter. Secondary degeneration had taken place, to any degree, however, only in the posterior and crossed pyramidal tracts. Both in the posterior and lateral and to a marked degree in the direct pyramidal tracts the rapid degeneration had led to a cribriform appearance of the tissue. In the dorsal cord the degeneration was of the same character as that of the cervical swelling, except that in the lateral and antero-lateral columns the diffuse degeneration was less distinct outside the direct and crossed pyramidal and direct cerebellar tracts. In the lumbar cord the degeneration in the posterior columns was confined to a triangular patch in each postero-median column, the bases of the triangles being parallel to each other along the posterior fissure. (See Fig. 3.)

The blood vessels of the pia and of the cord outside of the sclerotic areas were normal; within them there was slight thickening of the vessel walls and a webbed appearance along the course of the vessels, due probably to the presence of compound

granule cells. The cells of the anterior horns were pigmented, but otherwise reacted normally to the Nissl stain. The Marchi method revealed a few compound granule cells, stained black along the course of the vessels in the sclerosed areas. The anterior and to a greater degree the posterior roots contained many black granules.

Case six, R. J. P., a sailor, sixty-nine years old, was admit-



Fig. 3—Photograph showing a very diffuse type of degeneration with well marked reticular formation.

ted to the Philadelphia Home for Incurables, February 1, 1901. Four years before admission his legs began to feel tired and weak and stiff, and slowly grew worse, until finally he could scarcely walk and could stand only by balancing himself against the wall. Sexual power disappeared two years before admission and about the same time he became deaf in the right ear.

Examination. He was a well-built man with pigmented sores scattered over the trunk and extremities. There was no muscular atrophy. He had considerable difficulty in talking, his speech being a peculiar stammer with a decided tendency to

scanning. [He said he had always had a slight impediment in speech, "but nothing compared to what it is now." Static and motor ataxia was marked in the legs. Both legs were also spastic and weak. The knee, Achilles and cremasteric reflexes were exaggerated. The Babinski reflex was present on both sides. The biceps and triceps jerks were absent on the left side and very marked on the right. The right pupil, irregular in shape, reacted sluggishly to light, but with accommodation well. The irregular left pupil was rigidly fixed. There was anesthesia to all stimuli on both legs up to the knee and on the left thigh in a small area. The individual eye movements were good, but there was decided lateral nystagmus. There was a well-marked coarse intention tremor of the hands and head. Mental power degenerated during his stay in the Home, the tremor increased, speech became typically scanning; on January 22, 1902 he had a general convulsion with unconsciousness and he died three days later. The urine contained small quantities of albumin and granular casts.

Necropsy revealed the following: The convolutions over the anterior half of the brain were wasted, the pia adherent and somewhat thickened. There was much edema over the posterior part of the brain. The dura was normal. To the naked eye the spinal cord showed no lesion. When the brain was opened, after having been in a ten per cent. solution of formalin for twenty-four hours, more than a medium grade of internal hydrocephalus was present. The aqueduct of Sylvius and the fourth ventricle were also distended. The ependyma of the second and third ventricles was thickened, rough and easily separated as a leathery membrane from the subependymal tissue.

The ependyma of the fourth ventricle was granular.

Microscopic examination: The cerebral cortex was somewhat atrophied. The cortical cells appeared normal in structure when treated by the ordinary nuclear stains. There was a low grade, productive meningitis of the pia-arachnoid. The vessels of the pia showed a well-defined endarteritis. tangential fibers were at the best few and in some areas entirely absent. The ependyma was irregularly proliferated, there being heaps of cells in some places instead of a single row. Beneath the altered ependyma the glia was densely thickened and in it lay a plexus of vessels around which were several layers of small, round nucleated cells. As the thickened glia shaded off into the normal reticulum the vessels still retained their sheath of one or two rows of nuclei. The same condition existed in the lining of the fourth ventricle. Examination of the basal ganglia, the pons and medulla gave findings similar to those in the subependymal tissues of the cerebrum. There was a very marked gliosis beneath the ependyma of the fourth ventricle, and the ependymal cells there showed very marked proliferation, whirls of cells in some areas projecting into the lumen of the ventricle. Endarteritis and periarteritis were present in the pons and in less degree in the medulla. The pia-arachnoid of the medulla contained accumulations of small round cells here and there, but there was not the marked productive meningitis seen in the cortex. The nuclear ganglion cells of the twelfth and nucleus ambiguus were the seat of a diffuse chromatolysis. The pyramids were normal.

The meninges of the cord were normal. A slight degeneration shown by dropped out nerve fibers here and there was present in the lateral tracts and postero-median columns. A slight but distinct sclerosis was shown by the glial stains in these areas. The remainder of the cord was normal. The root zones in the dorsal and lumbar areas remained intact. The degeneration of the lateral columns in the lumbar enlargement was confined to the crossed pyramidal tracts. The nerve roots were not degenerated. The vessels of the cord itself showed no changes except that the media of the anterior spinal artery was perhaps a trifle thickened but not enough to have attracted attention had the cerebral vessels been normal.

Case seven, J. A., a laborer, fifty-five years old, was admitted to the Philadelphia Hospital, September 24, 1900. He had had syphilis some years before. He could not say how long he had been ill nor how his trouble began. He had been under the care of one of us (C.W.B.) three years before admission, and at that time had pain in the legs and back, a spastic and ataxic gait, increased reflexes in the legs, ankle-clonus, slight spasmodic retention of urine, no muscular wasting and normal pupillary reflexes.

Examination. There were weakness and spastic rigidity in both legs, more marked in the left. He could walk only by pushing a chair in front of him. There was some weakness of the left arm and left side of the face. He could not stand alone on account of both spasm and ataxia. There was some tremor of the tongue and slight ptosis of the left eyelid. He had some spasmodic retention of urine. Speech was slow but distinct. The normal reflexes of the legs were all much increased. The Babinski reflex was present. Ankle-clonus could not be obtained, probably because of the extreme spastic rigidity. The arm reflexes were absent. The pupillary reflexes were normal. He died on March 30, 1901.

The spinal cord lesions were as follows: The cervical cord stained by hematoxylin and by the Weigert method showed á diffuse sclerosis very dense in the posterior and lateral columns, and also a narrow band around the periphery and following the blood vessels inward. The nuclear

stains showed a well developed productive meningitis. There was marked endarteritis of the vessels of the cord. The media were especially thickened. In short there was a specific meningomyelitis. Both the anterior and posterior roots were degenerated. The anterior horn cells were normal by the nuclear, carmine and Nissl stains. There was an ascending degeneration in the postero-median columns, and annular degeneration in the postero-external columns.

In the dorsal cord the degeneration was more marked than in either the cervical or lumbar. The posterior columns were affected in their entire area except in the root zones. The lateral tracts were also densely sclerosed, with the annular area of sclerosis in the antero-lateral and direct pyramidal tracts noted in the cervical region. The meningitis was more marked

here than anywhere else in the cord.

In the lumbar cord the degeneration in the posterior columns was very slight and affected only the periphery. The roots were slightly degenerated. Besides the annular degeneration, there was also in the lateral column a wedge-shape area of degeneration of the crossed pyramidal tract, following the type of a descending degeneration from the dorsal lesion. The anterior horn cells were normal, but contained large quantities of the yellow pigment so commonly seen in these cells.

Case eight, J. J. M., a man fifty-three years old, was admitted to the Philadelphia Hospital, May 31, 1900. His memory was so poor and his answers were so contradictory that we

could learn nothing about the history of his illness.

Examination. He was well nourished. The facial expression was dull, but except the poor memory he showed no other psychic symptoms than those common in stupid men. There was no muscular atrophy. The muscle power was weak. The knee-jerks were exaggerated, but ankle-clonus could not be obtained, probably because of the spastic condition of the muscles. The Babinski reflex was present on both sides. Sensibility especially for temperature was diminished on the legs. There was considerable ataxia and in the arm movements like a very coarse intention tremor. He had marked static ataxia and could not walk unaided. The symptoms remained unchanged until the death of the patient from cardiac failure and edema of the lungs on July 4, 1900.

The brain exhibited no gross changes. In the cervical enlargement sections treated by the Weigert sheath stain revealed a dense sclerosis affecting the entire posterior columns, the crossed pyramidal and the direct cerebellar tracts. The remainder of the cord was entirely normal. The degeneration in the posterior columns could be followed to the lower dorsal region where it gradually disappeared, growing less section by section. The degen-

eration in the crossed pyramidal tract was equally well marked throughout the entire length of the cord down to the lower lumbar region. The direct cerebellar tract was likewise degenerated throughout its whole course. In the posterior columns the root zone was much degenerated. In the postero-median column it was hard to find a trace of myelin, so dense was the sclerosis. The same was true of the greater portion of the postero-external column, although a few scattered myelinated fibers were seen near the gray matter. The sclerosis in the crossed pyramidal tract was almost as dense as that in the posterior columns. There were more stained fibers in the direct cerebellar tract than in either of the other two. The spinal roots showed no degeneration.

The Marchi method revealed very few degenerated fibers, but there were along the course of the vessels and more markedly in the lateral than in the posterior columns numerous compound granule cells which stained black. The roots, treated by this method, showed no degeneration. The degeneration could not be followed above the medulla; in the posterior columns it extended up to their nuclei; in the lateral tracts to the decussation. The cells of the anterior horns contained much yellow pigment, but were otherwise normal. The meninges showed an increased number of nuclei, but a distinct meningitis could not be said to exist. The vessels of the meninges and of the cord showed everywhere slight, and in the sclerosed areas marked, thickening of the media.

To sum up we had in this case a system degeneration affecting the crossed pyramidal tracts, the direct cerebellar tracts, and the posterior columns throughout their entire course, the nerve roots and the remainder of the cord reacting normally to all the different staining methods except that of Nissl.

Remarks: There are in the collection described above five cases of diffuse degeneration affecting the posterior and lateral columns, in four of which there was an associated intense anemia. In only one was the anemia pernicious in type, in another it was associated with senility, and in a third with parenchymatous nephritis. The histological changes in this group do not differ from those already described by Minnich, Nonne, Dana, Putnam, Burr and in the later contribution of Putnam and Taylor.

In cases one and six there was marked central gliosis. In case one, associated with anemia secondary to parenchymatous nephritis, the gliosis increased downward from the cervical re-

gion until in the lumbar cord it constituted a distinct tumor formation destroying the posterior commissure and explaining the loss of the pain sense. Subjective disturbances of sensation are common in the early stages of this group, and loss or impairment of the pain sense is more frequent than interference with the other forms of sensibility. The only constant lesion of the gray matter in this group, if indeed it be in truth a lesion, was intense pigmentation of the cells in the anterior horns. No distinct isolated hemorrhages were seen in any of the sections. We see nothing in these cases against accepting the intoxication theory to explain the diffuse degeneration and much in its favor. In the two cases in which nephritis and uremia were present this theory seems more rational than any other. The vessel changes were such as can be explained by the involvement of the vessel walls in the sclerotic process. There was, however, in the case of senile anemia a diffuse hyaline change independent of the sclerotic areas, and in the lumbar enlargement where the sclerosis was least, the degeneration of the vessel walls was as marked as in the most sclerotic parts of the cord. We do not attribute any special importance to the degeneration of the roots, seen only in the Marchi preparations, and do not consider it intense enough to explain the pains and disappearance of the reflexes. Though we have included these cases under the general title of postero-lateral scleroses, the process was not confined strictly to those tracts. The subacute degeneration affected in all our cases the lateral and anterior portions of the cord, but the secondary sclerotic process in the posterior and lateral columns was most intense in these areas, and the clinical phenomena are referable to them.

The two cases of syphilis of the nervous system illustrate two different types of disease due to the same cause. One (case seven) presented the lesions of a meningo-myelitis and a dense sclerosis of the posterior and lateral columns. Throughout the rest of the cord a slight perivascular sclerosis was present. There was also a ring of marginal sclerosis. The clinical picture differed but slightly from that of the long-standing cases of subacute degeneration.

The other (case six) is, to us, the most interesting of those

here reported. In 1900 we reported to this Association¹ a case that showed at different periods the clinical picture of tabes, nonsyphilitic postero-lateral sclerosis, and spastic paraplegia, and at necropsy presented the lesions of multiple sclerosis. We refer to that case here, and have included it in the series, in order to contrast it with case six which in life gave as typical a clinical picture of disseminated sclerosis as we have ever seen, and postmortem an equally typical histologic picture of cerebro-spinal syphilis. The degeneration of the spinal cord was strictly confined to the posterior and lateral columns, without meningeal lesions and with such slight changes in the vessels that they can be disregarded in explaining the degeneration. There was also a very slight diffuse sclerosis of the posterior and lateral columns, following a system type, with sufficient defect in the myelin to give clear pictures to the naked eye after treatment by the sheath stains. This intrinsic degeneration of the cord and the lesions of the ependymal and subependymal tissues point to some intoxicating agent, as the lesions were identical with those described by us in a case of acute internal hydrocephalus for which no cause was found.2 In investigating it we carried out a series of experiments on lower animals to study the effects of toxic materials placed within the ventricles. The reaction of the ependyma and underlying tissues in the intoxication experiments were strikingly like those in case six, and in the case of internal hydrocephalus. Tuberculin, sterilized urine, diphtheria toxin, dilute hydrochloric acid, and dilute carbolic acid all gave practically the same results, varying only in degree. The spinal cords of the animals were not studied.

Though the differential diagnosis between multiple sclerosis and multiple disseminated syphilis of the nervous system has been discussed by Gowers, Sachs and many others, this case and those reported by v. Bechterew and Krewer³ lead us to agree with Oppenheim that a differential diagnosis must sometimes remain doubtful. Krewer's case showed at first a clinical picture of syphilis which later was replaced by a typical clinical picture of multiple sclerosis. There was no necropsy in it. In

¹JOURNAL OF NERVOUS AND MENTAL DISEASE, Dec., 1900. ²JOURNAL OF Experimental Medicine, Oct., 1900.

²Journal of Experimental Medicine, Oct., 1900. ³Zeitschrift f. klin. Med., 1899.

von Bechterew's case, as quoted by Krewer, the lesions resembled very closely those found in our case. There was, however, no hydrocephalus. That multiple sclerosis may present the clinical picture of a postero-lateral sclerosis is shown by the case reported by us.

The subject of combined system disease has been so thoroughly thrashed out without reaching any positive conclusion, that we shall not discuss the subject further than to state that case eight belongs to a group in which the degeneration is localized in certain fiber systems of the cord, usually the posterior columns, and the crossed pyramidal and direct cerebellar tracts. By the term combined system disease we do not mean to imply that the entire neurone to which the fiber belongs is affected, but only the portion in the cord damaged by the causative agent. We would differentiate this group from the subacute or diffuse degeneration group by the distinct limitation of the pathological process to the tracts above mentioned. We recognize fully that sometimes, when a local focus of softening has occurred, such as the area in the posterior columns in case three, should the patient live long enough a secondary degeneration might occur, and in so far the lesion be systemic. We think that such was the case in case one in which the patient so far recovered as to resume work and in which the degeneration and sclerosis in the posterior median columns were very dense, resembling to that extent sections from a case of dorso-lumbar tabes.

This small group of cases illustrates how difficult it is to arrange a classification of the diseases of the white matter in which the posterior and lateral columns are affected alone, or associated with minor changes in the other tracts, which with our present knowledge of the anatomy and physiology of the cord can be of no diagnostic value. For clinical and laboratory purposes we may arrange such cases as follows:

- I. Friedreich's ataxia.
- 2. Tabes with associated diffuse sclerosis extending into the lateral columns. To this group may be added those cases of tabes associated with paretic dementia with secondary lesions in the crossed pyramidal tracts.
 - 3. Tabes with degeneration in the crossed pyramidal and

also in the direct cerebellar tracts, with or without degeneration in Clarke's column.

- 4. Posterior sclerosis with sclerosis of the lateral columns and disease of the anterior horns. (Chronic poliomyelitis.)
- 5. Primary lateral sclerosis with minor changes in the posterior columns.
- 6. Subacute diffuse degeneration of the spinal cord due to anemia, cachexias, sepsis, *ctc.*, with sclerosis in the posterior and lateral tracts predominating both in clinical manifestation and under the microscope.
- 7. Diffuse interstitial sclerosis, seen occasionally in chronic alcoholism with multiple neuritis,⁴ in which the parenchymatous degeneration is secondary to the overgrowth of glial and connective tissue elements. To this same group on account of the similarity of the pathological process may be added the syphilitic postero-lateral scleroses secondary to meningeal lesions.
- 8. A combined system disease of unknown origin affecting the posterior and lateral columns, and distinctly confined to the direct and crossed pyramidal tracts and the posterior columns; the direct cerebellar tract may also be involved.

⁴Phil. Med. Journal, Nov. 2, 1901.

PARALYSIS OF ALL FOUR LIMBS AND OF ONE SIDE OF THE FACE, WITH DISSOCIATION OF SENSATION, DE-VELOPING IN A FEW HOURS AND RESULTING FROM MENINGO-MYELOENCEPHALITIS¹.

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We are familiar with acute syphilitic meningo-myelitis chiefly as disease of the thoracic cord. Out of twelve cases tabulated by Williamson², in ten the lesion was wholly or almost wholly thoracic. In one it was thoracic and lumbar, in the other it was thoracic and cervical. The cases which have fallen under our observation have been thoracico-lumbar chiefly. It may be said that the localization to one portion of the cord is seldom absolute, in other words, although the lesion may be situated chiefly in one region of the cord, as the thoracic, some infiltration of round cells, and other evidences of meningo-myelitis are usually found in other regions. Cervical or cervicobulbar forms of acute syphilitic meningo-myelitis, which might be designated clinically as high myelitis, are almost as rare as high tabes compared with the tabes which attacks the cord at lower levels, but in this cervical form the lesions are not confined to the cervical region, and are merely most intense in this portion of the spinal cord. Syphilitic meningo-myelitis is often associated with meningo-encephalitis. The following case is therefore in the first place of interest because of the unusual

¹Read at the annual meeting of the American Neurological Association, June 5, 6 and 7, 1902.

location of the myelitis. It also has other points of interest, as the manner in which the facial nerve and its nucleus on one side were attacked, its simulation of hemorrhage into the cervical portion of the spinal cord, and the interesting sensory and reflex phenomena.

The patient, a colored man, forty-five years old, a laborer, was admitted to the Men's Nervous Wards of the Philadelphia Hospital, January 28, 1902. He had had gonorrhea twice, and a sore on the penis two years before. He had been a hard

drinker. His family history was unimportant.

On September 26, 1901, the patient stated that he fell from a wagon, striking on his shoulder. He immediately rose, climbed to his wagon and continued working. Two weeks later he was obliged to quit work on account of pain in his left arm. He went to the Philadelphia Hospital for treatment, where he remained for about three weeks, at the end of which time he was again able to work. He worked until December 25, 1901, when pain in his left arm and between his shoulders compelled him to discontinue. The pain lasted for about one month.

At about 3 P.M., January 22, 1902, he suddenly lost the use of his left arm, this paralysis being followed in a short time by loss of control of the left leg; later by paralysis of the right side of the face, of the right arm and then of the right leg. Five or six hours elapsed between the time when he first noticed paralysis of the left arm and the time when the right leg became

paralyzed.

He complained of swelling and of dull pain in the parts after they were paralyzed, but more especially in the left arm. He felt no pain immediately preceding the paralysis, and he was not unconscious at the time. He was not aphasic. After the paralysis he had a severe headache which ceased only the day

before his admission to the hospital.

On admission (January 28, 1902), his general appearance was that of a well developed and well nourished colored man. He had had no movement of his bowels for five days before admission, and had voided no urine for at least twelve hours. Examination showed right facial paralysis, including the frontalis and orbicularis palpebrarum muscles. When the eyebrows were elevated no wrinkles were produced on the right side of the face. He was unable to fully close the right eye, and lachrymation was present. Speech was muffled, the mouth being drawn to the left side when attempts were made to talk, and whistling was impossible. Paralysis of the sixth nerve was not apparent. Hearing on the left side had been affected since the patient was eight or nine years old, and he could not hear

the tick of a watch close to his ear; on the right he could hear the tick at about ten or twelve inches. Tinnitus aurium was not present. He had no difficulty in swallowing, but complained of difficulty in keeping food in his mouth when eating. The uvula was not deflected to either side. His sense of taste was preserved, a solution of quinine and spirits of camphor and sweetened water being recognized on the tip and right half of the tongue. The tongue deviated slightly to the left. The pupils were contracted, the left irregular in outline; irides reacted sluggishly to light and on accommodation. Hemianopsia was not apparent. Knee-jerks and Babinski reflex were absent; the grip on both the right and left side was zero.

His chest appeared normal, the clavicles were large and prominent, and the supraclavicular fossæ depressed. The lungs were resonant anteriorly. Examination of the heart revealed a systolic murmur; his pulse was rapid, full and easily compressed. His abdomen was normal in appearance and was not

distended.

The patient was again examined on January twenty-ninth. His breathing was labored, and his voice weaker than on the day previous. He complained of pain in his shoulder. On the thirtieth of January his breathing was less labored. He did not talk much, and answered by nodding his head. It was reported that he passed blood with his stools. His appetite was good and he had slept well the night previous.

Between January twenty-ninth and February first he was visited several times by both of us. The results of our examinations are summarized below, his general condition not chang-

ing much during this period.

The patient was fully conscious, and had no aphasia. His voice was a mere whisper, but he understood all that was said to him. He said positively that he had not been unconscious even during the development of the paralysis, and he was equally positive that he had not had convulsions. Wrin-kles had disappeared on the right side of his forehead. Bilateral ptosis, equal on both sides, was present, and could not be overcome by voluntary efforts to open his eyes. When the evelids were closed distinct paresis of the right orbicularis palpebrarum was present, the right palpebral fissure being about 5 cm. in width. In showing his teeth his mouth was drawn to the left side, the right side of his face remaining immobile. The tongue protruded very slightly toward the left, even when the right corner of the mouth was drawn up by the hand of the examiner; the masseter contracted firmly; the uvula was in the median line, and no distinct paralysis of the soft palate was present. The pupils were equal; both irides responded to light and promptly in convergence. The eyeballs exhibited nothing abnormal. Movements of the head from side to side and from

before backward could be freely made.

The patient could shrug his shoulders well, but with the exception of this movement paralysis of both upper extremities was complete. The limbs were flaccid, no contracture being present. Both lower limbs were paralyzed in all parts. The ophthalmic (supraorbital) reflex was present on the left, absent on the right. The conjunctival reflex was normal on the left, and greatly diminished on the right. Jaw-jerk was slightly exaggerated. The coraco-brachial or inner shoulder reflex was present. Biceps-jerk was almost lost on each side; the triceps-jerk was preserved on each side. The wrist-reflex was lost on each side. Knee-jerk was present on each side, but diminished, a little prompter on the right. The ankle-jerk was present on each side, and slightly exaggerated on the right. Ankle-clonus and the Babinski reflex were absent on each side.

The sensory conditions of this patient were of unusual interest. Tactile sense was preserved on both sides of the face, in the upper extremities and on both sides of the thorax and abdomen. Temperature sense (tested for heat and cold), and pain sense, were preserved on both sides of the face and neck, but were lost on the right side of the chest and abdomen, and diminished on the left side of the same. Temperature and pain senses were also lost in the distal portions of the right upper extremity. At a point about three inches above the elbow, hot, cold, and painful impressions began to be recognized. pain and temperature senses were diminished in the left upper extremity. Sensation for touch was fully preserved in the left lower extremity, and somewhat diminished in the distal portion of the right lower extremity. Sensation for heat, cold and pain was almost completely lost in the left lower extremity, and completely lost in the right.

Respiration was entirely costal in type. The heart-beat was very rapid; a loud systolic murmur was present, loudest at the second intercostal space on the left side; the second sound of the heart was accentuated. The murmur was fully as distinct in the second intercostal space on the right side as in the corresponding space on the left. He had had no disturbance of bowels or bladder previous to his paralytic attack. When examined on January twenty-ninth and thirtieth he had incontinence of urine and feces; catheterization was necessary. He had had no dizziness nor vomiting at any time preceding the paralysis. He stated that his sight had been poor for three months. No

ophthalmoscopic examination was made.

On February first he was somewhat duller, and early in the day did not seem to know where he was. On the next day his

condition was much the same, but his pulse and respiration were more rapid, and he complained of pain between the shoulders. On the third of February the patient frequently protruded his tongue to moisten his lips, and complained of his mouth being dry. He was duller and weaker than on the previous day, and did not pay so much attention to questions. His respirations were shallow. He had not slept well the night before. He refused milk, but asked occasionally for water; his appetite was fairly good. On February 4, 1902, at 2.30 A.M., he died.

A summary of the most important coarse pathological appearances found on necropsy is as follows: Edema of the spinal cord in the upper cervical region, adhesion of the dura: chronic splenitis and perisplenitis, old fibrous splenic adhesions; calcified tuberculous nodules of the right lung. A detailed ac-

count of the examination of the brain is subjoined.

The calvarium was thick, measuring at the occipital end 1.25 cm. and at the frontal end 1 cm. The dura was tightly adherent to the calvarium and a small new growth was present directly in front of the pituitary fossa, not extending above the surface of the dura. This growth had two distinct parts. A small nodule was present in the middle cerebral fossa (left), and was soft to the touch.

The brain was somewhat edematous in the parietal and occipital lobes. There was no indication of hemorrhage in the brain or pons, and no hemorrhage in either lateral ventricle was apparent. The fluid in the lateral ventricles was not increased

in amount.

No distinct abnormalities of the choroid plexus were observed. Horizontal section of the upper portion of the basal nuclei revealed no pathological condition. No gross lesions were found in the brain. The masses noted in the base of the skull did not extend into the bone itself, but lay within the dura.

An increased amount of cerebrospinal fluid was found be-

tween the meninges and cord.

The brain and spinal cord were removed and examined mi-

croscopically.

Sections of the brain and spinal cord were stained by the Weigert hematoxylin and Marchi methods, by thionin, hemalum and acid fuchsin. Intense round-cell infiltration was found in the pia over the optic commissure, both in the walls of the vessels of the pia, and about some of the blood vessels within the commissure. The optic nerves and commissure as shown by Weigert's hematoxylin stain, were not degenerated.

Intense round-cell infiltration was found in the pia covering the medulla oblongata and the walls of some of the pial vessels were thickened. Here and there within the medulla oblongata a small vessel was found with round-cell infiltration about it. Some of the cell-bodies of the left facial nucleus were degenerated, *i.e.*, the nucleus was displaced to the periphery of the cell-body and the chromophilic elements were broken up, but most of the cell-bodies of the left facial nucleus were normal or nearly normal. The right facial nucleus was exceedingly degenerated, and in most of the cell-bodies the chromophilic elements at the center of the cell-body had become granular or had disappeared, and only a few of these elements remained at the periphery of the cell-bodies; in others, no chromophilic elements



Nerve cell-bodies of the right facial nucleus seen in one field of the microscope. The cell-bodies are drawn in their relative positions as shown by the microscope, and almost all are intensely degenerated.

at all were found. The nuclei were displaced to the periphery of the cell-body. The contrast afforded by the two facial nuclei was very striking. The intramedullary portion of the right facial root was deeply stained by the Weigert hematoxylin and did not appear to be degenerated by this method. The degeneration of the facial nerve was evidently of very recent origin, and it was impossible to say whether the disease of this nerve began in its nucleus or in its peripheral portion. The alteration of the cell-bodies was such as could be produced by disease of the peripheral portion of the nerve. The round-cell infiltration in the pia over the medulla oblongata was not greater on

the right side than on the left, so that the degeneration of the right facial nerve could hardly be explained by the meningitis. The nerve may have been injured in its peripheral portion by a small growth like those described within the dura of the base of the skull; and the paralysis may have existed longer than the

patient was aware of.

The fourth, fifth and sixth cervical segments were so softened by inflammatory changes that the normal relations of white to gray matter were entirely altered, and a large portion of a transverse section at this level was not colored at all by the Weigert hematoxylin stain, because of degeneration of the medullary substance. The round-cell infiltration within the spinal cord and pia at this level was intense. Here and there were swollen axones or spaces from which the axones had disappeared. Some of the small blood vessels within the spinal cord and pia at this level had much thickened walls, and numerous very small hemorrhages were found within the spinal cord. Some of the vessels of the pia were almost entirely closed by

the intense proliferation of the intima.

The round-cell infiltration within the pia was very intense at the eighth cervical segment, but considerably less so than at the area of softening. The veins of the pia were thickened, and in some of them round-cell infiltration was intense, especially within the inner coat. The small arteries of the pia at this level were not intensely thickened. No degeneration at the eighth cervical segment could be found by Weigert's hematoxylin method. The direct pyramidal tracts were found degenerated when the Marchi method was employed, but elsewhere at the eighth cervical segment the degeneration as shown by the Marchi method was very slight. Slight degeneration was found by this method in the left column of Burdach near the posterior horn, and may have been caused by degeneration of the posterior roots of this segment. The destruction of nerve fibers at the area of softening had not existed sufficiently long to cause much secondary degeneration detectable even by the Marchi method. Most of the cell-bodies of the lower cervical region, as shown by the thionin stain, were normal or nearly normal. Collections of small bacilli were found within the spinal cord at the eighth cervical segment. It seems hardly probable that these bacilli were the cause of the alteration of the central nervous system, and they may have invaded the spinal cord shortly before or shortly after death. The intense thickening of the blood vessels at the area of softening indicated that the process had been of long standing, and that the softening was probably the final result of a long-existing impaired circulation. The changes were such as are seen in syphilis, and the case probably was one of syphilis.

Round-cell infiltration was found in the pia of the mid-thoracic region, but was not quite so intense as in the eighth cervical segment. No degeneration by Weigert's hematoxylin stain was found at the mid-thoracic region.

The round-cell infiltration of the pia in the lumbar region was about as intense as in the mid-thoracic region. Some of the cell-bodies of the anterior horns of the lumbar region were

tumefied and much pigmented.

In this case the rapidity with which the paralysis of the four extremities and of the face, with sensory, pulmonary and other symptoms of a serious character, developed made the diagnosis of spinal hemorrhage into the cervical region or into the oblongata-spinal transition seem probable, and this diagnosis was at first made. The pathological examination showed acute myelitis of high grade, the foundations of which were laid in previous disease of the vessels and membranes. Numerous small hemorrhages were present in the more or less inflamed and disintegrated cervical cord, but these were secondary, or at the most concomitant with the attack of myelitis. In severe acute myelitis hemorrhages almost invariably occur, these in some instances being punctiform, in others of considerable extent, even sufficient to cause some bulging of the cord; not infrequently both punctiform hemorrhages and those of larger size are present in the same case. The fundamental disease in these cases is, however, the myelitis, although this usually occurs on the basis of previous disease of the spinal vessels.

When the question of diagnosis is between myelitis and hemorrhage, this is understood to mean between primary hemorrhage into the spinal cord (hematomyelia) and myelitis, or between primary hemorrhage into the spinal membranes (hematorrhachis) and myelitis. The manner of onset may give the clue to the diagnosis between hemorrhage into the cord and acute myelitis. In hemorrhage the attack is usually sudden and without premonitory symptoms, although this rule is not without rare exceptions, as when a paralysis preceded by some paresthesia comes on slowly. The development of paralysis in the case here recorded was relatively rapid; nevertheless five hours were occupied in its completion. Prodromal symptoms were not entirely absent, even presuming that the pain in the arm which followed the fall of

four months previous had no connection with the attack of myelitis, it will be remembered that for one month previous to the development of paralysis in the four extremities the man had had pain between his shoulders and in his left arm. Other prodromal symptoms were absent, but this was sufficient to cast some doubt upon the diagnosis of primary hemorrhage into the cord. The usual causes of hemorrhage were absent, unless the fall of four months previous may have been thought to bear some causal relation to the attack, but the traumatism was too remote to have induced a gross spinal hemorrhage. It was more likely to play a rôle in the determination of an inflammatory process in the spinal cord of a syphilitic subject. The patient had suffered from syphilis, the common cause of acute myelitis.

The diagnosis from spinal meningeal hemorrhage, extradural or subdural, was less difficult than that from primary hematomyelia. In spinal meningeal hemorrhage the symptoms of irritation come on suddenly and are usually of a very severe type, although even this rule is not without exceptions, probably in cases in which the hemorrhage into the spinal spaces occurs gradually. A meningeal hemorrhage sufficient to have produced the profound paralytic, sensory, reflex and other symptoms which were present in our case, would in all probability have been ushered in by severe pain in the back and in the distribution of the nerves whose roots were irritated by hemorrhage, and in addition by rigidity of the back, possibly local spasm in nerve distributions, contractures and even more or less generalized convulsions. With the exception of a steady pain in the back and one arm these irritative phenomena were not exhibited by the patient prior to the paralysis. In spinal meningeal hemorrhage paralysis usually occurs after the phenomena of irritation have been well marked, while in both acute myelitis and hematomyelia, whether primary or secondary, the paralysis is one of the earliest symptoms. The usual causes of spinal meningeal hemorrhage were absent in our case, while as already stated, syphilis, the common cause of myelitis, acute or chronic, was present. The course taken by the disease was not that of spinal meningeal hemorrhage, which usually results in death because of the extent of the inundation, or in partial recovery

through absorption after the lapse of considerable time. The rapid development of the paralysis of all the limbs resulting from myelitis makes the case one of unusual interest.

Another disease from which a case like the one here recorded might need to be differentiated is spinal or cerebrospinal tuberculous meningomyelitis. A pure spinal tuberculous meningitis is rare, but the cerebrospinal affection is not uncommon, and when the lesions are basal and spinal, the latter predominating, the case may show some features similar to those presented by a syphilitic cervical or cervicothoracic myelitis of the acute or at least of the subacute type. A case has been reported by Hensen³ in which the diagnosis of cerebrospinal syphilis was made, but in which the autopsy showed the case to be one primarily of tuberculous meningitis, inflammation and degeneration of the spinal cord taking place secondarily. This case is in itself one of unusual interest, and is worthy of being recorded in detail in this connection.

A woman forty years old became sick eight days before she was received into the hospital with chill and severe headache. These symptoms were soon followed by severe pain in the back and the region of the kidneys, especially on the right side. A few days later disturbances in micturition occurred, requiring catheterization. On the eighth day of her disease she was taken into the hospital with a diagnosis of kidney and bladder disease. On admission she was mentally disturbed, confused and excited. She had pains in her head and back, in the region of the kidneys and in the legs. The atlanto-occipital articulation was tender to pressure, but no rigidity of the neck was present. There was, however, extraordinary rigidity of the whole vertebral column. No vertebra, however, was especially tender. Slight abducens paresis on the right side; bladder distended, detrusor paralysis; some hyperesthesia in the legs; patellar reflex exaggerated; other reflexes normal. The patient with support and even alone was able to take a few steps, although with rigid back and legs. No choked disc, not even later. The statement that out of 12 children she had borne most of them had died in early life aroused the suspicion of syphilis, although no other symptoms of syphilis were obtained. Some improvement occurred in the patient's condition, the mental excitement diminished, and voluntary urination became possible. Temperature was diminished. On the other hand, however, rigidity of the neck and of the vertebral column became constant. The hyperesthesia also diminished. On the eighteenth

day of the disease indisputable symptoms of spinal cord disease in the thoracic region developed. She complained of paresthesia in the right leg and then in the left. She was unable to raise the lower limbs. The muscles became flaccid, and marked reflex contractions developed in testing for the patellar reflex and in irritation of the skin. A few days later girdle pain in the abdomen developed on each side as high as the eighth rib; the abdominal reflex was lost. On the twentieth day of the disease the legs became completely paralyzed, and sensation in the lower parts of the body was almost lost. The patellar reflex was lost, the muscle excitability in the peroneal muscles on both right and left side was increased. In the left anterior tibial muscle there was beginning reaction of degeneration. Incontinence of feces and tendency to decubitus. Now cerebral symptoms again became conspicuous. The sensorium became clouded. The patient became somewhat delirious at night, and there was some evidence of facial paralysis which sometimes seemed stronger on the right side, sometimes stronger on the left. The abducens paralysis which at first had come on had disappeared. The muscles of the eye were not implicated. On the twenty-first and twenty-second days the mental disturbance developed into profound stupor, and slow forced movements appeared in the upper limbs, and only occasionally seemed to be somewhat coördinated. The diagnosis was made of cerebrospinal syphilis.

At the necropsy the diagnosis of syphilis was not confirmed, but a basal tuberculous meningitis with more extensive tuberculous meningitis of the spinal membranes, especially in the thoracic region, and secondary softening of the cord were found. Also miliary tuberculosis in the lungs, liver, kidneys and ulcers

in the vermiform appendix.

The microscopical examination showed that the pia-arachnoid was in a state of inflammation throughout the entire length of the spinal cord, but more especially in the thoracic region. The inflammatory condition was more pronounced on the posterior aspect than on the anterior. The walls of the vessels, arteries as well as veins, were thickly infiltrated by round cells, almost difficult to recognize, and their layers could not be distinguished. Some vessels were thrombosed. The small-cell infiltration extended from the vessels into the surrounding pia. Distinct tubercles were not found, possibly on account of the short duration of the disease, but the absence of tubercles is not uncommon in tuberculosis of the cerebral membranes. However a few typical giant cells were present. In the middle thoracic region only scattered portions of the gray matter could be recognized, in which a few ganglion cells could be discovered after considerable searching. By the Pal stain a few normal nerve fibers were found, most of them, however, had disappeared. No tubercles were found in any part of the spinal cord substance.

From the pathologico-anatomical point of view the degeneration of the spinal cord was secondary to the meningeal disease, especially of the vessels of the meninges—everywhere where there was meningeal disease of high grade there was degeneration in the border zone of the spinal cord also, whereas in the thoracic region there was complete destruction and dissolution of the spinal cord substance. The primary lesion, however, was the vascular lesion of the meninges.

A comparative study of Hensen's case and of the case here recorded shows that in the case of tuberculous meningo-myelitis the paralytic, sensory and reflex symptoms of grave type developed gradually and after a period in which the symptoms of meningeal irritation were prominent. It was eighteen days before indisputable symptoms of involvement of the cord were exhibited, and twenty days before paralysis was complete. The extensive meningeal inflammation was shown by the rigidity of the back, and also probably by the hyperesthesia of the extremities. In our case paralysis of all four limbs was complete in five hours, and the grave sensory, reflex and visceral phenomena came on with almost equal rapidity. With the exception of pain between the shoulders and in the left arm, symptoms of meningeal inflammation were absent. Basal symptoms were present in both cases, but most of these developed in the tuberculous case late in the disease, while the facial paralysis in our case was a prominent feature in the paralytic syndrome which came to the surface in the short period of five hours if the patient's statement may be relied upon.

It is well to add that the diagnosis of tuberculous meningomyelitis in Hensen's case was made from the condition of the lungs and intestines, and not from the presence of tubercle bacilli within the spinal cord.*

²"Syphilitic Diseases of the Spinal Cord," Manchester, 1899. ⁸Hensen, H., Deutsche Zeitschr. f. Nervenheilk., v. 21, No. 3-4,

p. 240.

⁴A case of tuberculous meningomyelitis with paralysis has been published by Joseph Collins in the December, 1902, number of this JOURNAL.

PHILADELPHIA NEUROLOGICAL SOCIETY.

October 28, 1902.

The President, Dr. John K. Mitchell, in the chair.

Astasia-Abasia.-Dr. F. X. Dercum referred to a case which he had intended to present to the Society, but the patient had recovered. He was a colored boy, thirteen years old, and had been struck on the back with a This was followed in the course of a month by great incoördination in the legs, and for seven months he was incapacitated for walking. He could move the legs well while in bed on his back. He made a perfect recovery under suggestion, without hypnotism, and the use of a placebo.

Peculiar Swelling of the Back of the Hand.—Dr. F. X. Dercum exhibited a woman who had a negative family history, was married, and the mother of two healthy children, and had had no miscarriages. years ago she had a prolonged illness of a doubtful nature. During convalescence she had swelling of both feet and hands. This swelling disappeared except in the right hand, where it still persists. The swelling has undergone no change. Her weight increased remarkably six months ago, and she gained one hundred pounds in the course of a year.

The dorsal aspect of the hand presents a soft gelatinoid swelling like that of myxedema. The finger nails are ridged and brittle, and somewhat atrophic. She has pain about the roots of the nails and the skin of the distal

phalanges is somewhat shiny.

Dr. T. Diller reported a case of myasthenia gravis pseudoparalytica. Dr. C. K. Mills reported a case with symptoms of myasthenia gravis, resulting from an electric shock of 1,300 volts.

Dr. S. W. Morton and Dr. C. K. Mills reported a case of acute bulbo-

Dr. T. H. Weisenburg read a paper on the effects of electricity on the human body.

Bulbar Palsy.—Dr. W. G. Spiller presented a man, aged thirty-two years, who in September, 1901, first noticed a sensation of fatigue in the muscles of the lower part of the face. He had been drinking previously. The sense of fatigue usually was not caused by eating or by cold, but by talking or reading aloud, and was worse in the morning. He complained also of tremor in the lips and neck on the left side, and fibrillary tremors in the left side of the lower part of the face had once been observed in the The man was unable to elevate either corner of the mouth, and when he laughed the corners of the mouth were drawn outward, but very slightly upward. Sensation on both sides of the face was normal. The reactions of the muscles of the face to the faradic current were normal. Dr. Spiller presented the case as one of bulbar palsy or myasthenia gravis pseudoparalytica in the early stages.

Dr. Wharton Sinkler remarked that the case reported by Dr. Diller was extremely typical, although the author had not laid stress on one of the most characteristic features of these cases, that is, the extreme exhaustion of the muscles after exertion. He spoke of the speech being worse after talking, but did not refer to the effect of muscular exercise. An interesting point in connection with the case was the occurrence of angioneu-This Dr. Sinkler considered favored the view advanced by rotic edema.

some writers that myasthenia gravis is due to an infection.

With regard to the case reported by Dr. Mills, he said that it did not look to him like a case of myasthenia gravis, but more like one of true bulbar paralysis, from the fact that there was atrophy of the tongue, facial muscles, and of the upper extremity, with exaggerated knee-jerks.

Dr. D. J. McCarthy said that in the examination of the nervous system made in a case of myasthenia gravis of Dr. Burr, the findings were negative, but in that case and in another with autopsy since, distinct lesions in the thymus gland had been found. The first case developed after pregnancy, and there was a persistent thymus gland as large as the fist, and the lymphoid tissue throughout the body was increased in amount. Examination of the muscles gave negative results. In the second case, examination of the thymus showed enlargement with an abscess as large as a small walnut in the central part. Examination of the nervous system and of the muscles gave negative results. He referred to other reported cases in which similar lesions of the thymus gland had been found.

Dr. S. W. Morton said that the only reason for mentioning electricity as a probable cause in his case was that careful study had failed to reveal anything else as a cause. In the case of bulbo-spinal paralysis presented by Dr. Mills, the same cause suggested itself. It seemed possible that the frequent application of weak currents might exhaust the nervous system. Many of these cases of acute paralysis are undoubtedly due to auto-intoxication, or to some form of poisoning. With this idea in mind, he had looked for enlargement of the spleen, but found none. He mentioned

that the pharyngeal reflex was impaired, but not lost.

Dr. Alfred Gordon read a paper on the condition of sensation in motor paralysis of cerebral origin, and reported the results obtained by a study

of thirty-five cases.

Dr. F. X. Dercum remarked that the most common condition referred to by Dr. Gordon was hypesthesia. That hypesthesia is very frequently present in hemiplegia is a matter of common experience. This is especially true in old cases. A possible cause of the hypesthesia in these cases is deficient nutrition in the paralyzed limbs, which are cold and livid and the seat of arrested functional activity. Under such conditions we should look for lesion of the nerve endings and diminished conductivity of the nerve trunks.

Dr. Dercum did not think that anesthesia was necessarily in propor-

tion to the motor loss.

Dr. Charles K. Mills said that while Dr. Gordon's paper was an interesting contribution to the question, it did not seem to him that, granting the accuracy of the observations, the conclusions apparently drawn were entirely warranted. Of the thirty-five cases examined, there were a number which failed to show any of the sensory disturbances referred to, and the author had made no attempt to explain the character of the lesion in those cases in which the symptoms were essentially motor. The speaker also called attention to the fact that no attempt had been made to separate the different varieties of astereognosis.

The majority of the cases of hemiplegia seen at the Philadelphia Hospital are due to subcortical lesions. Many are due to capsular, thalamo-capsular, lenticulo-capsular, and lesions of considerable extent, often hemorrhagic, which have acted in different directions, and there is every reason to believe that they involve the separate tracts which exist in the corona radiata, and in the capsule, and in other parts.

While not agreeing in the conclusions of the author, he held that this form of clinical work was of the greatest importance in the solution of

these problems, especially when confirmed by autopsy.

Dr. F. Savary Pearce said that it had occurred to his mind that the anesthesia, the hypesthesia, and the other sensory changes occurring early

in hemiplegia might be accounted for by the vasomotor paresis together with the formation of toxic products, and their retention in the tissue of the paralysed side, thus affecting the tactile corpuscles and the peripheral part of the nervous system. This part after a time partly or in whole recovers. In the chronic cases the sensory disturbances are probably the result of lack of nutrition, as suggested by Dr. Dercum, and not necessarily due to changes in the central nervous system. He believed that in many cases the lesion is in the peripheral parts rather than in the brain itself.

Dr. William G. Spiller said that the paper was purely clinical, and that we should not attempt to draw anatomical conclusions from it. In two of the cases in his own ward, which Dr. Gordon had employed in his study, Dr. Spiller obtained necropsies. In one there was an area of sclerosis in the occipital lobe, extending forward and involving the posterior limb of the internal capsule. In the other the optic thalamus was implicated.

In connection with Dr. Gordon's paper, Dr. Spiller referred to the recent paper by Marie and Guillain, the latter paper being anatomical. These authors had shown how difficult it is to determine the cause of hemianesthe-

sia in hemiplegia, from the lesions found.

Dr. D. J. McCarthy referred to a case, the specimens from which he was at present studying. During life there had been a quadraplegia; no loss of sensation, although muscular sense was not studied. The autopsy showed hemorrhage affecting the lemniscus and a small area about it. The secondary degeneration extended upward, affecting the posterior part of the internal capsule. There was also some degeneration of the cortex, but this had not as yet been sufficiently studied, to permit an exact determination of the area.

Dr. Alfred Gordon said that it had not been his intention to solve the question of localization. He had wished simply to approach the subject from one side, and to study in an impartial manner the question whether in these cases of motor paralysis of cerebral origin, there were sensory disturbances or not. The literature shows such variations in the results that he wished to study the matter for himself. The question of separate localization is still far from being solved. As Marie has suggested, why should we not, as the evidence is so contradictory, cease fixing our minds on the carrefour sensitif, and look for sensory fibers in some other part; just as with the motor fibers, we remove a portion of the motor cortex and the patient recovers with complete return of power; this shows that the motor area is not the only portion of the brain which controls the motor nerves.

Dr. F. X. Dercum reported a case of adiposis dolorosa with involvement

of the joints.

Periscope.

NOUVELLE ICONOGRAPHIE DE LA SALPETRIERE.

(Vol. 15, 1902, No. 5, Sept.-Oct.)

I. The Deviation of the Vertebral Column in Parkinson's Disease. J. A. Sicard and L. Alquier.

2. The Syndrome of Spasmodic Torticollis. DESTARAC.

3. Study of the Root and Cell Lesions of Tabes. A. Thomas and G. Hauser.

 Contribution to the Study of the Physiological Action of Some Bromides. C. Féré.

5. Does a Peroneal Form of Charcot Marie Amyotrophy Exist? P. Sainton.

I. Parkinson's Disease and the Vertebral Column.—The authors of this article in observing cases of Parkinson's disease were impressed by the fact that the deviation of the vertebral column was a frequent occurrence among them. This point had not received any mention either in the special monographs on this subject or in the text-books. In seventeen cases of Parkinson, twelve presented definite deviations of the vertebral column. This large proportion does not seem to depend upon accidental circumstances, because in examining some old published cases and photographs, the authors found evidences of this same condition, which had escaped the attention of former writers. The variety of deviation was found to be distributed as follows: four kyphoses, one scoliosis, four kypho-scolioses, two lordo-scolioses, and six kypho-lordo-scolioses. This vertebral column affection cannot be dependent upon cachexia or the prolonged stay in bed, because three only of this series would come into such a category. The examination of these cases shows very plainly that the deviations are directly caused by muscular rigidity. This theory is noted by the authors in concluding the article, which is illustrated very well by photographs that emphasize the authors' standpoint.

2. Spasmodic Torticollis.—Destarac presented to the last Congress of Toulouse two patients showing the same group of symptoms which recalled on the one hand spasmodic paraplegia and on the other Friedreich's disease and hereditary cerebellar ataxia. In this latter affection the integrity of the muscular force is in sharp contrast to its functional impotence systematized under the form of functional spasm, as is shown in certain complicated and co-ordinated movements, such as walking and writing. A spasmodic torticollis seems to be the most striking phenomenon of this condition and for that reason the syndrome of spasmodic torticollis has been the term used to describe it. The author attempts to prove that such cases and Friedreich's disease and hereditary ataxia have a common symptomatology. The first case, a girl of eighteen, offers the following points of similarity to these two conditions: Its appearance in the eighth year of life. Difficulty in writing preceding all other symptoms by a long time. Peculiar position of the feet in walking. Involuntary movements of the head and trunk. Flat foot and scoliosis. Tachycardia, dyspnea and vertigo. Contrunk. Flat foot and scoliosis. Tachycardia, dyspnea and vertigo. Conservation of muscular power. The reflexes are increased and not absent as is most commonly found in Friedreich's. The second case shows even more similarity. Man twenty-nine years old; at the age of twelve, difficulty in writing. Abolition of tendon reflexes, with conservation of skin reflexes. Flat foot, scoliosis. Static ataxia of right arm. Involuntary movements of the face. Speech defect. Fibrillary contraction. Slight decrease in objective sensibility, and the abolition of electro-muscular sensibility. Attacks of nystagmus, tachycardia and oppression. Modification of mechanical and electrical excitability, which recalls the myotonic reaction of Thomsen's disease. The cerebellar syndrome dominates the clinical picture of Friedreich's and hereditary ataxia, and the cerebellum appears to be either directly or indirectly most in evidence as a possible causative factor. After closely analyzing the symptoms present in these two cases and comparing them with those found in the above named diseases, Destarac concludes that they depend upon a disturbance of muscular tonus and of muscular equilibrium which manifests itself only under certain conditions, sometimes when the patient is in an upright position, and at other times when he attempts to execute certain complex movements with the conservation of muscular force. The many theories in regard to muscular tone may be summarized as follows: (1) Tone is the external manifestation of a state of permanent excitability of the motor cells of the cord, kept up by peripheral impressions. (2) This state of excitation of the motor cells is subject to a double influence, inhibitory or excitatory, arising from the superior centers (brain, cerebellum, medulla). These hypotheses applied to the cases in point, strongly support the conclusion that the relation between them and Friedreich's ataxia and hereditary ataxia is a very close one.

them and Friedreich's ataxia and hereditary ataxia is a very close one.

3. Root and Cell Lesions of Tabes.—This is a valuable contribution to the knowledge of the pathology of tabes which extends through two numbers of the journal. The article opens with a short consideration of the various theories which have been advanced to explain the origin of the tabetic lesion. The one point that stands out most definitely among all theories is the rôle which the posterior nerve roots play. It is the atrophy of these which occupies the preponderant position in all the results noted from the study of tabes. In spite of the recent work of Obersteiner, Redlich, and Nageotte, no definite decision has as yet been reached in respect to the cause, nature, and pathogenesis. For this reason the authors have made use of their large material to study the posterior nerve roots, their course between and in the neighborhood of the ganglion, above and below it. The ganglion itself and the alterations in the nerve cells have been investigated also. In the second portion of the article a very excellent anatomical description of the ganglion and its nerves is given, illustrated by very clear diagrams. The stains used were Weigert and Pal, with Azoulay for the nerve fibers and Marchi. As the specimens were mainly hardened in Müller the Nissl stain was seldom used. Forel's method of staining en masse was used with good effect for the axis cylinder, with an after treatment by Marchi. The third portion of the article is given to the description of the findings in the eleven cases of tabes which form the basis of this study. A short clinical résumé precedes each case. The description of the microscopical findings is very accurate and painstaking, and the illustrations are unusually good and convincing. The fourth portion of the paper is given up to a recapitulation of the findings, and the fifth to an interpretation of them. Under the former are noted (1) Lesions of the root fibers, the study of the root atrophy in the subganglionic tissue. (2) Lesions in the connective tissue of the ganglion. In all cases a pachymeningitis more or less pronounced existed about the posterior root. (3) Lesions in the parenchyma of the ganglion. The article ends with the authors' interpretation of these findings. In respect to the rôle which the nerve cells of the posterior root ganglia play in the origin of tabes, the following are noted: (1) The cellular lesions are inconstant, and the more recent the tabes, the less chance there is of finding them. (2) They are of little consequence in proportion to the number of cells present. (3) The changes are not specific in character; sometimes there is an alteration of protoplasm (chromatolysis, vacuolization, and atrophy) or of the nucleus (atrophy, disappearance); sometimes an inflammation of the pericellular capsule with hyperplasia of the cells or of the connective tissue. The following conclusions

are noted as the results of this very interesting study:

The essential lesion of tabes is after all a dystrophy, which occurs in the whole of the peripheral sensory neurone, predominating especially in the central prolongation of the cell. This dystrophy attacks generally certain portions of the motor protoneurone and of the sympathetic system. The histological alterations are characterized by modifications in the nerve fibers which can be compared under certain conditions to those which occur in the course of a toxic neuritis, either produced experimentally or in the course of disease. They are very distinct from a Wallerian degeneration. If the cell body of the sensitive protoneurone appears in general to keep its structure and its normal aspect, it is nevertheless sometimes the seat of a trophic lesion. In addition, in spite of the absence of atomic lesions, it is reasonable to suppose that its trophic function is in a certain measure compromised.

4. Bromide Action.—This paper is a continuation of the experiments made by Féré to determine the effects of doses of bromide upon the work capacity. The cortex of the brain gives rise to voluntary muscular activity upon excitation, and the ergograph of Mosso is the means used to measure this. The mass of experimental data makes an abstract of this article

an impossibility.

5. Does a Peroncal Form of Charcot Marie Amyotrophy Exist?—This question is answered in the affirmative by Sainton in a brief communication in which he mentions two cases of amyotrophy limited to the lower limbs. The grandmother of these individuals had the same condition which was limited as in them to the lower extremities. Although there has been no autopsy on such cases, the existence of a peroneal amyotrophy of the Charcot-Marie type cannot be doubted.

SIDNEY I. SCHWAB (St. Louis).

AMERICAN JOURNAL OF INSANITY. (Vol. LVIII, 1902, No. 4.)

I. Etiology of Paresis. Hurd.

2. The Early Diagnosis of Paresis. F. X. Dercum.
3. The Comparative Frequency of General Paresis. O. G. Wagner.
4. Treatment of Paresis; Its Limitations and Expectations. E. Cowles.
5. Heredity—With a Study of the Statistics of the New York State Hospitals. W. G. Krauss. 6. Senility and Senile Dementia.

Russell.

7. Some Observations upon the Elimination of Indican, Acetone and Diacetic Acid in Various Psychoses. Coriat.

8. Studies in the Manic-Depressive Insanity, with Report of Autopsies in Two Cases. S. Paton.

I. Etiology of Paresis.—The author takes up the various factors bearing on the etiology of this disease, beginning with syphilis, citing the results of observations of different writers, which vary all the way from II to 94 per cent., while in his own cases he has found only 20 per cent. of paretics syphilitic, which he accounts for largely by the inability to secure a complete anamnesis in many cases of the disease. As a further argument in favor of lues, he shows that this disease is particularly rare where syphilis does not exist, as in Ireland; but again in Egypt and Japan, where it is extremely prevalent, these countries lack the special stress coincident with Western civilization. Further clergy, priests and Quakers, who are rarely syphilitic, are proportionately free from paresis. It has also been observed,

that paresis is much less prevalent in rural districts, where lues and mental stress are rare. He calls attention to the like relation of syphilis and paresis in men and women, i.e., about 4 to 1. In juvenile cases hereditary syphilis has been found to the extent of 100 per cent. He ascribes little weight to heredity and considers paresis one of the least transmissible of mental diseases. He regards alcohol more as an incidental factor, and inebriety is often developed after the onset of the disease and therefore more a symptom than a cause. With respect to head injuries, they have no special etiological bearing and the effects of lead, tobacco, etc., he regards as problematical. He believes the increased mental anxiety and over-exertion of the century just largely responsible for the startling increase in the frequency of paresis. The similarity of tabes and paresis has been urged in favor of the syphilitic etiology of paresis, for in the former disease a history of luetic infection is found in 80 to 90 per cent. of the cases. The failure of anti-specific treatment in paresis is ascribed to the different tissues affected in brain syphilis and paresis, in the latter the neurone, in the former the meninges, and the latter is incapable of regeneration. He concludes his paper: "That syphilis is the most common factor in the production of paresis. That it may cause it directly—an exciting cause. That it may cause it indirectly by bringing about such a devitalization of the system generally as to render other influences operative—a predisposing cause. That it is not usually the sole cause, but that there is associated with it the deleterious effect of mental stress and over-excitement, dissipation and alcoholism, and heredity. That in a certain relatively small number of cases mental stress, worry or overwork may be the sole ascertainable cause. That traumatism may also be the cause in a still smaller proportion of cases, but that in many of them it acts as a developing or ripening agent of an incipient paresis in a syphilitic subject.'

2. The Early Diagnosis of Paresis.—Differentiation from neurasthenia difficult in the early stage, yet the symptoms only superficially similar, those of the neurasthenic being more subjective, while the paretic rarely complains or consults a physician, his friends narrate his symptoms. In neurasthenia the physical appearance rarely changed, or if so, differently from paresis, where the facial expression is changed in quality. The neurasthenic's movements are not altered in precision, not incoördinate. The neurasthenic's sleep disorders nearly the opposite of the paretic's; the neurasthenic is at his best in the evening, the opposite with the paretic, for then his little delinguencies in the matters of dress, deportment and speech defects become more prominent. Quantitative mental changes occur early in paresis, not so in neurasthenia; the neurasthenic is distinctly nosophobic, has no essential memory defect, still mental functions quickly tire. In paresis early mental fatigue, but loss of ability to remember and to comprehend is added; soon marked impairment of memory, manifested by neglect of attire, business, various improprieties, etc., which are foreign to neurasthenia. The loose conception of neurasthenia largely chargeable for any confusion with paresis. This early stage he terms the neurasthenoid. Paresis may be confused with hypochondria and melancholia. Same factors distinguish it from hypochondria as from neurasthenia. Physical symptoms to be early looked for: Visual field may show some contraction at a very early period, but there is no retinal hyperesthesia, as in neurasthenia. Sequence of physical signs immaterial. The "paretic manner" so hard to describe, precedes all other physical signs, consisting of slight changes in facial expression and gesticulation: "that something in the eye, the face, the gestures, the words, which reveal that the patient is not in close and accurate touch with his surroundings, with his business affairs, with the fact of his illness, or for that matter, with any subject." Significance of specific history obvious. Very difficult to differentiate from alcoholism, for alcoholic excess is one of the

early symptoms of paresis. In alcoholism obtusion to proprieties and moralities soon cease after discontinuance of the alcohol. If alcoholic dementia exists, it is of the confusional type. General appearance of alcoholism indicative. In brain syphilis symptoms of organic lesion, diffuse, or limited, without quantitative mental changes. Early differentiation between tabes and paresis may be impossible, for many cases beginning apparently as tabes end in paresis. Absence of mental symptoms distinctive. Careful

observation will generally lead to diagnosis in neurasthenoid stage.

3. Comparative Frequency of General Paresis.—Paresis, a disease known only about eighty years, being first recognized in this country at McLean Asylum by Dr. Bell in 1843. Statistics collected from various sources since 1849 show there has been a gradual increase from 1.5 to 12 per cent. at present of all admissions, and is everywhere from 5 to 8 times more frequent in men than in women, varying according to the urban or suburban character of the patients in the institution. The London Asylum reports show a percentage of 12 and 6 men to one woman affected, as well as that more married than unmarried people have the disease. It affects all classes and representatives of all vocations are found among its victims. Data from the Manhattan State Hospital East show a total average duration of a little more than two years and that native Americans are more prone to the disease than foreigners. It is further shown that the disease is rare before twenty and after sixty. From all sources of information it is found that this disease affects about 8.75 per cent. of all insane, is most frequent between thirty and fifty, is gradually increasing in frequency, men seven times more liable to the disease than women, is invariably fatal, and lasts less than two and a half years. Is nearly twice as frequent in a city population as in that of the rural districts. No special class subject to the disease, but wherever mental stress is combined with more or less hereditary influence. Overwork, sexual excesses, alcoholism, irregular mode of life, sunstroke, and cerebral traumatism seem to be special factors in its

production.

4. Treatment of Paresis; Its Limitations and Expectations.—Neurological, histological and pathological findings present a barren field of limitations with respect to therapeutics. Pathological research with the microscope has nearly reached its limit, while physiological chemistry may be able to solve many clinical problems as yet beyond our ken. Metabolic changes must precede visible structural changes is a self-evident fact, and these metabolic changes are chemical within the molecules. From the etiological standpoint we are again limited therapeutically, as antisyphilitic treatment has generally proven futile. Heredity is of minor importance as an etiological factor. Alcohol may be a contributing cause by lowering the normal resistance to morbid influences, and therefore etiology affords no guide to treatment. The expectations of treatment offer an interesting field. While the relation between syphilis and paresis is unknown, it is probable there is some intervening factor or condition uniting them, for without syphilis, mental stress, excitement and excesses lead to neurasthenia, while the syphilitic neurasthenic generally becomes a paretic. A state of toxemia seems in all probability to represent this intervening condition. Drs. Mott, Kraepelin and Wernicke recognize the toxic agency in the etiology of paresis, which has induced a degeneration of the neurone, and this toxic agency may be of bacterial origin. It is a well established fact that auto-intoxications disturb the intimate harmony of brain cell metabolism, but this field is still one largely unexplored. Dr. Bruce and Dr. Ford Robertson have recently called attention to the exacerbations of this disease being accompanied by gastric and intestinal disorders, rise of temperature and hyperleucocytosis. By injecting serum obtained from a paretic during a remission Dr. Bruce claims to have effected a complete remission in two cases. Dr.

Bruce's conclusions are: "(1) General paresis is a disease directly due to poisoning by the toxins of bacteria, whose point of attack is through the gastric and intestinal mucous membrane. (2) The poisoning is probably a mixed poisoning, but the bacillus coli is apparently one of the noxious organisms. (3) The result of treatment with a serum taken from a case of general paresis in a condition of remission and injected subcutaneously into an early progressive case, points strongly to the fact that some form of serum treatment is the proper one." Dr. Robertson believes this disease depends on the occurrence of chronic toxemia of gastro-intestinal origin, due to a failure of the natural alimentary bacteria, thus giving rise to toxins whose absorption leads to vascular changes in the brain and so degeneration of the nerve elements; syphilis merely altering the natural immunity, and it is along this line Dr. Cowles believes that future researches may lead to alleviation of this disease.

5. Heredity—With a Study of the Statistics of the New York State Hospitals.—After defining the various forms of heredity and giving the statistics bearing on heredity from the several State Hospitals of New York, he summarizes by showing heredity in 25.8 to 39.7 per cent. of all cases. Nothing new is offered as to nervous diseases and the article concludes with a classification of nervous disease under direct, indirect heredity and those

with no heredity.

6. Senility and Senile Dementia.—Senile cases constitute about 23 per cent. of the admissions to the Willard State Hospital. The writer recites the signs of senile decay, both mental and physical, in that there is a general blunting of the mental functions and a deterioration of the physical processes, both of which may remain within normal limits. There are wide variations as to the age when these changes appear and in the rapidity of their progression, yet sixty is regarded about the average. Temperament and diathesis are the prime factors which may cause senility to become of a pathological nature, as they largely govern the individual's resistance to pernicious factors, like the infections and toxins, and they thus induce senile dementia. A careful examination will generally be competent to separate normal senility from senile dementia, and of its symptoms the most important, aside from hallucinations and fixed delusions, are slight exaltation and restlessness, degraded, filthy habits, erotic tendencies, destructiveness and marked perversity in conduct. Insomnia may also be a prominent

symptom.

7. The Elimination of Indican, Acetone and Diacetic Acid in Various Psychoses.—Indican seems to be increased in depressive states, particularly when attended by auto-intoxication, and its elimination decreases when the latter condition is overcome. The author gives a ready method for determining the relative amount of indican. The deductions of different writers are summarized as to the significance of indican, acetone and diacetic acid and their excess in the urine is generally accepted to be an indication of defective metabolism and coincident with auto-intoxication. Excess of acetone is said to occur in states of fear, but this the author has been unable to confirm. The abstracts of 26 cases are given, all of which have depressive phases, and a summary shows that indican is found to be coincident with katatonic and epileptic stupor, akinetic forms of dementia præcox and general paresis, as well as in alcoholic depression and depressive phases of the manic-depressive psychosis, or any disease where akinesis is a prominent symptom. On the other hand there is a lessened elimination of indican in katatonic excitement, exhilaration of general paresis, as well as in exalted states of dementia præcox and in the manic phases of the manic-depressive psychosis, or in other words in states of hyperkinesis. These variations in indican elimination are proven to be wholly independent of stools, diet and weight. Acetone was found in all the cases except epileptic

stupor, diacetic acid in melancholia, the akinetic conditions of dementia præcox and general paresis, alcoholic hallucination with fear. pears to be no definite relation between the production of these bodies and

the psychoses.

8. Studies in the Manic-Depressive Insanity.—Careful and systematic study of these cases reveals the presence of certain symptoms which form the basis of a common clinical complex whose variations are much more quantitative than qualitative changes. Use of the terms "mania" and "melancholia" smacks of casuistry, and the careful study of these conditions discloses their intimate relationship, the manic states generally being preceded by depression. Several cases are cited to elucidate this fact and they show that manic and depressive conditions are not antithetical. Further special study should be made of such cases as to blood pressure and the changes in the urine during the periods of excitement and depression. McCorn (New York).

REVUE NEUROLOGIQUE.

(Vol. X, 1902, No. 11, June 15.)

1. Primary Bronchial Cancer, followed by Miliary Carcinosis with Poly-

neural Complications. J. OBERTHUR.

1. Polyneural Complications in Bronchial Cancer.—An account of what the author believed to be a case of primary carcinoma of the left lung, having a bronchial origin, which rapidly invaded the right lung. The epithelial elements entering the general circulation through the pulmonary vein, were thus distributed throughout the entire system, and the cancer of the lung was most highly favored by a corresponding infection of the entire organism. The rarity of such a development, the large number and great variety of the metastases, the absence of any large ganglion accessible to palpation, the preponderance of motor and sensory phenomena, the difficulty of examination, the unusual progress of the disease, all these factors easily explain why a satisfactory diagnosis was impossible during life. The lesions of the neuro-muscular system were of two kinds; beside the ordinary lesions of cancerous cachexia, lesions of a mechanical nature were also present, on the one hand considerable compression and destruction of the motor and sensory nerve endings, and on the other hand general cancerous muscular inflammation, which together gave a particularly painful character to the polyneural complications of this peculiar pathogenesis.

JELLIFFE.

BRAIN.

(Vol. 25, 1902, No. 98, Summer.)

I. On Pachymeningitis Hæmorrhagica Interna. J. O. W. Barratt.

2. Case of Tubercular Tumor of the Spinal Cord in a Child Two Years
Old. W. K. Hunter.

3. A Contribution to the Pathology of Acute Insanity. DAVID ORR. 4. Uniradicular Palsies of the Brachial Plexus. E. FARQUHAR BUZZARD.

5. A Case of Sclerotic Atrophy of Cerebrum and Cerebellum, Familial Type, Occurring in a Boy. J. MITCHELL CLARKE.

6. The Pathology of So-Called Acute Myelitis. H. Douglas Singer.

7. A Case of Acromegaly under Observation for Five Years, with Charts of the Fields of Vision. F. RICHARDSON CROSS.

I. Internal Hemorrhagic Pachymeningitis.—The author summarizes his observations as follows: (1) Intravascular separation of fibrin is an apparently constant event in subdural membrane formation. (2) Subdural membranes are free from micro-organisms as revealed by staining methods. The results of attempted culture upon agar, though not always negative, indicate that during life such membranes are free from bacteria. (3) Experimental implantation of false membrane into the subdural space of cats fails to set up a progressive process of membrane formation. The few changes which occur outside the operation area are comparable to a process of repair. Finally the view may be advanced that pachymeningitis hæmorrhagica interna is a morbid process, in which the essential lesion is a separation of fibrin, usually within the blood vessels, upon which the other changes in this condition are largely if not chiefly dependent.

2. Tubercular Tumor of the Cord.—This is an interesting contribution particularly to the study of fiber degenerations with too many details to

permit abstracting.

3. Pathology of Acute Insanity.-Dr. Orr presents the results of the examination of the nervous system of six patients with acute insanity dying of exhaustion. The appearances found in the cerebral cortex, fronto-motor area, and in the cord (Case 1) were slight changes affecting the edge of the chromophile bodies generally throughout the cell, and others showing atypical central chromatolysis. In the cortex the nucleus of the small pyramidal cells stains very deeply and diffusely. There are few cells in the gray matter of the cord which color deep blue and appear homogeneous. In the posterior root ganglia cells were profoundly altered by chromolytic changes. Two chief types of alterations are described as very characteristic. The first type is described as the large type in which the chromophilic elements are small and granuliform, both around the nucleus and in the central parts of the cell generally. Towards the edge the chromophile granules may either be found of a slightly larger size or there may be a distinct single row of large, slender elongated chromophile elements extending completely round the periphery of the cell. Elsewhere the granules are exceedingly small and densely crowded. The nucleus is central and is surrounded by a clear zone—the perinuclear space. The second type, the medium sized, with larger granules. The chromatolysis in both cells is varied. In the first the small granules break up into still smaller ones, lose their affinity for the stain and disappear and achromatosis ensues. Nucleus usually central but may be eccentric. In the second type the chromatolysis may be central, the granules break down to minute dust-like granules. The nucleus becomes eccentric to the least degenerated side. Vacuolation also occurs. In cases 2 and 3 similar cell changes were described. In case 4 a dissolution of the chromophilic material in the cortical nerve cells had taken place and in the body of the cell a faintly stained network can be perceived. The nucleolus is vacuolated. In case 5 the cortical changes as in 4. Case 6 showed similar changes to case 1. Degenerated fibers in the cord were constant.

4. Uniradicular Palsies of the Brachial Plexus.—E. F. Buzzard discusses, (1) the histories of six cases in which the symptoms pointed to a lesion of one of the spinal nerves forming the brachial plexus; (2) he discusses the sensory and motor phenomena produced by such a condition; and (3) he considers the anatomical site and pathological basis of the morbid

process concerned. From his study he concludes:

(1) There exists a clinical group of cases in which the symptoms strongly suggest a more or less complete destruction of functional continuity in one of the spinal nerves forming the brachial plexus: (2) the objective disturbances of sensibility resulting from this lesion closely conform to those observed by Sherrington after cutting a posterior root in a monkey. They differ in some respects from the anesthesia produced by the division of a peripheral nerve; (3) the anesthesia is largely disassociative in character, and does not occupy the whole cutaneous area to which the afferent fibers of the spinal nerve are distributed; (4) the objective hypesthesia is not associated with any subjective sensation of numbness, and is consequently overlooked by the patient; (5) the atrophy of the affected muscles is in excess of what might be expected in view of the fact that many of the

muscles receive fibers from two or more spinal nerves; (6) the condition generally occurs in persons who have at some time been subjects of a disease affecting the cardio-vascular system. The morbid process is probably

vascular in character, and may be sudden or gradual in its onset.

5. Sclerotic Atrophy of Cerebrum and Cerebellum of Familial Type.—
J. Mitchell Clarke describes a case of a boy of seven and one-half years, who clinically may be grouped as intermediate between a case of cerebral diplegia of post-natal origin, and a hereditary cerebellar ataxia with the occurrence of a peculiar form of blindness due to a special incidence of the disease upon the occipital lobes. The case seems unique, but is too detailed to admit of full abstracting.

6. Pathology of So-Called Acute Myelitis.—H. Douglas Singer gives a brief historical résumé of the pathology, describes the morbid anatomy in two cases of acute course, and presents some remarks on the etiological and

clinical features of the disease. He maintains that:

(1) So-called acute myelitis is found on microscopical examination, in the majority of recorded cases, to be not inflammatory, but due to thrombosis of spinal vessels. (2) That by far the most common cause of this thrombosis is syphilitic arteritis; and that senile arterial degeneration forms a considerable proportion of the remaining cases; (3) this view as to the pathology is confirmed clinically by the analogy between this disease and cerebral thrombosis. In conclusion he urges that the recognition of thrombosis of spinal vessels as the most common cause of the symptom-complex described as acute myelitis is not merely of academic interest, but may be of practical value. It is possible that prompt treatment, in many cases presenting premonitory symptoms and giving a history of recent syphilis, may ward off an attack of this nature. For this reason alone, to say nothing of the confusion which has arisen from the indiscriminate use of the term "myelitis," he advises that the nomenclature used by Dr. Bastian should be adopted, and that these cases be classed as "thrombotic softening of the spinal cord," or, more simply, "spinal thrombosis."—a name which at once suggests the analogy with cerebral thrombosis.

7. Acromegaly.—F. Richardson Cross describes a patient who has been under observation five years and gives complete charts of the visual fields that showed that in 1895 no definite serious impairment of sight was present. Acromegaly was not then pronounced. In 1897, with complete establishment of the disease, there was blindness in the temporal field of the right eye and almost complete loss of sight in the left eye. The degrees of the blind portions in the visual fields of both eyes have progressively lessened with the improvement in the general health.

Jelliffe.

ARCHIVES DE NEUROLOGIE.

(Vol. 14, 1902, No. 81, September.)

I. General Paresis from Data Compiled at the Psychiatrical Clinic of the University of Moscow: by S. Soukhanoff and P. Gannouchkine.

2. Corneal Depression and Serious Encephalopathic States. B. Pailhas.

3. A Case of Hysterical Breast. VIALLON and ALOMBERT.

4. Hysteria of Saint Theresa.

I. General Paresis.—This article is a statistical study of 682 cases of general paresis which have been treated in the Moscow Clinic between the years 1887 and January I, 1901. The total attendance during this period was 3,916. Of the paretics 590 were men and 92 were women. This shows that a fifth of all the cases were paretics; the relation of the male paretics were only 6.5 in 100. Their tables show that the number of paretics has increased in the last few years, not only absolutely, but what is of more significance, relatively as well. The number of female paretics in-

creased in the past four years from 5.54 to 8.09 per cent. They consider that mental disease is twice as frequent in men as in women, and that this ratio has not been materially altered in more recent years; bearing this relation in mind their data show that the relative number of female paretics has increased very much more in the past four years than the number of

male paretics.

The largest number of cases of paresis occur between the ages of 31 and 40; most of the male paretics occurring during the second half of the period and most of the female in the first half. Regarding the influence of occupation they conclude that farming and country life do not predispose to general paresis. They found that in 75 per cent. of the cases there was present a psychopathic or neuropathic hereditary factor, and in almost onehalf of all the cases there was a history of alcoholism on the part of father or mother. These figures correspond to those given to show the influence of heredity in all mental disease, and hence simply designate general paresis as being in this respect in harmony with psychoses in general. Syphilis was positively present in 61.54 per cent. of the males and 20.9 per cent. of the females; very probable in 9.23 per cent. of males and 25.37 per cent. of females; possible in 9.61 per cent. of males and 14.92 per cent. of females; denied in 19.61 per cent. of males and 38.81 per cent. of females. The time elapsing between the syphilitic infection and the development of general paresis in 90 per cent. of the men varies from six to twenty years. The longest period was thirty-three years, the shortest, three years. Alcoholism in one degree or another played a rôle in 80 per cent. of the male cases and 40 per cent. of the female.

Among 497 paretics they observed forms of dementia in nearly 50 per cent; the form of mania in 34 per cent; melancholia in 6 per cent. and other forms such as paranoia, circular, etc., much more rarely. The patellar reflex was found to be exaggerated in one-half of the cases, and absent in

one-fifth of the number (of males) and one-sixth (of females).

The pupils were unequal in 73 per cent. of males and 66 per cent. of females; they were equal in 26 per cent. of male paretics and in 36.7 per cent. of female paretics. The pupils did not react in 82 per cent. of the male cases and in 77 per cent. of females. There was reaction in 17 per cent. of males and in 22.5 per cent. of females. Apoplectiform attacks occurred

much more frequently than epileptiform.

2. Corneal Depressions.—Pailhas calls attention to the depressions in the cornea described by Brière de Boismont as occurring in the eyes of insane during an attack of acute delirium and notes that they are present in patients suffering from serious encephalic conditions. They are not caused by any appreciable anatomical lesions. The corneal depression is unstable, changes its location, appears and disappears. Although in one case it developed within an hour after a violent cranial injury, as a rule it appears only at time of marked psychical depression, of acute delirium or of encephalitis. Pailhas thinks that lesions of the cerebral nerve centers exercise in some unknown way an indisputable morbid influence on the cornea, and that the prognosis in cases of encephalitis, acute mania or cranial traumatism in which corneal depression develops, is unfavorable either as regards life or as regards dementia following depressed psychopathic states.

3. Hysterical Breast.—Viallon and Alombert report the case of a young girl, eighteen years old, presenting some of the stigmata of hysteria, who at time of menstruation has very marked engorgement of the breasts. At the same time she is in a very nervous and excited state. The swelling persists for a few days during which it is alternately increased and diminished in size, but is at its maximum during the menstruation or for a few days preceding it. The breasts are painful and tender when swollen. No induration. Nipples retracted. No fever. The mental state on one occa-

sion was almost maniacal. This condition of the breast has been ascribed by some writers to the influence of irregular and painful menstruation. The menstruation of the patient was of such unhealthy character. The enlargement differs from the normal physiological swelling of the breasts at time of menstruation simply in its much greater size and its being accompanied with pronounced and well developed hysterical manifestations.

4. Hysteria of Saint Theresa.—Continuation of article begun in preced-STRAUSS (New York). ing number.

ARCHIVES D'ELECTRICITE MEDICALE.

(1902, No. 15, July.)

1. The Electrolytic Treatment of Xanthelasma. P. Pausier.

2. A Study of Galvano-Faradisation. CLUZET.

3. How Should the Electric Treatment be Applied in Basedow's Disease, and What Results can be Expected? M. Mally.

4. The Electric Treatment of Infantile Paralysis; A Clinical Study. Albert-Weil.

5. The Laws that Determine the Opacity of Different Antiseptic Powders to X-rays. DARCOURT.

I. Treatment of Xanthelasma.—A description of two cases of xanthelasma which were successfully treated by the author, who employed for the active negative electrode several needles introduced into the diseased areas of skin. After five or six applications of a current of from 6 to 10 M. A. the patches completely disappeared.

2. Galvano-Faradisation.—A lengthy, detailed paper in which galvanofaradisation is studied in its physical, physiological, and therapeutical aspects. The author concludes that galvano-faradisation, thanks to the combination of the motor, electrotonic, and catalytic actions of the composite currents, presents real advantages over galvanism or faradism used indi-

vidually.

- 3. Electrical Treatment of Basedow's Disease.—After discussing the various clinical forms of exophthalmic goiter and the various symptoms calling for the application of special currents, the author summarizes as follows: "(1) Electricity in all its forms can be of use in the treatment of Basedow's disease. (2) We have endeavored to show that a rational electric treatment is conceivable which is adaptable to every form of Basedow's disease. It consists, in fact, of constantly taking into consideration the general and symptomatic state of the patient; a univocal treatment of Basedow's disease would be nonsensical therapeutics. (3) Static electricity can be used to advantage on patients with sluggish nutrition. In the opposite condition this agent is not tolerated, and its employment may cause harm. (4) Faradism may be used to combat individually all the morbid symptoms of Basedow's disease: dilatation of the carotids, thyroid hypertrophy, exophthalmos, muscular paresis, and tachycardia. Its judicious employment always produces a diminution, at least momentary, of the distressing symptoms; intolerance is never noticed. (5) Galvanism is more restricted in its application; this form of electricity, whose efficacy is not doubtful, can be used in certain cases, alone or in combination with faradism.
- 4. Treatment of Infantile Paralysis.—In this article the author describes his method of treatment of anterior poliomyelitis and gives the results obtained in twenty cases, some very recent and others of long standing. The method recommended is to employ in the immediate post-febrile period a mild descending stabile current, using a broad electrode on the back and suitable sized vessels filled with water as electrodes for the paralyzed extremities. At the end of the third week a rhythmically interrupted galvanic current is to be used and as soon as the regenerating muscles respond to faradism, that form of current is to be used.

5. Opacity of Antiseptic Powders to X-rays.—The author summarizes his results as follows: (I) Compound substances that contain a simple substance of high atomic weight are opaque to X-rays. (2) The higher the atomic weight of the simple body, the greater the degree of the opacity. (3) For compounds that contain the same simple substance of high atomic weight, but in different proportions, the opacity is directly proportionate to the percentage of the simple substance present.

R. H. CUNNINGHAM.

(115, 1902, August.) I. On the Present State of Electrodiagnosis. J. CLUZET.

2. A New Example of the Numerical Application of the General Laws Governing the Transparency of Matter to X-rays. L. Benoist.

3. The Action of Continuous Currents on Sclerotic and Cicatricial Tissues. STÉPHANE LEDUC.

4. On Electro-Diagnosis upon the Bared Nerve in Man. J. Bérgonie.

5. An Historical Sketch of Electro-Therapy. E. Albert-Weil.

I. State of Electrodiagnosis.—A long detailed paper unsuitable for abstraction. The author, however, considers that the method of exploration by means of condenser discharges yields the best results and is the method to employ in electrodiagnosis.

2. Transparency of Matter to X-rays.—A short paper correlating the results of Dr. Darcourt (see the July abstract) with those previously published by the author, from which, by means of a given formula, the opacity of various substances to X-rays can be readily calculated.

3. Action of Continuous Currents.—After relating in detail his results in six patients with cicatrices, giving rise to more or less deformity and disability, the author attributes the beneficial action to the fact that continuous currents in passing through the organism give rise to a double current of ions, the hydrogen, metals and metallic radicles descending with the current, and the hydroxyl, OH, and the acid radicles ascending with the cur-The therapeutic action is undoubtedly due to the production of these movements.

4. Excitation of Bared Nerves in Man.—On certain occasions it becomes necessary to make an absolutely definite diagnosis and prognosis in disease of or injury to peripheral nerves, and owing to difficulty of doing so when the nerve is excited through the overlying skin and other tissues, the author recommends exposing the nerve and stimulating in the usual

manner employed by the physiologist. He concludes:

"(I) It is easy to investigate the state of the irritability of a nerve exposed during operative intervention. (2) This research gives the most valuable indications regarding the diagnosis and the prognosis. (3) Inexcitability determined in this way points to a very grave prognosis."
R. H. Cunningham.

(1902, 116, September.)

I. On Accidents due to X-rays. Ondin (de Paris).

2. International Congress of Electrology and Radiology held at Bern, September 1-6, 1902.

I. X-Ray Accidents.—In this extensive paper occupying thirty-three pages, Dr. Ondin presents a very thorough account of the pathology and treatment of radio-dermatitis in its acute and chronic forms. As regards the treatment practically nothing has been found so far that prevents the development of the burn after prolonged exposure. The author considers that the X-rays alone produce the dermatitis and that metallic screens merely protect in accordance with their transparency to X-rays. To protect his own hands the author uses fencers' gloves, containing a padding of fine brass wire.

R. H. Cunningham.

(1902, 117, October.)

I. The Influence of the Galvanic Current upon Muscular Force. SCHNY-

2. The Production of Sleep and of Local and General Anesthesia by Intermittent Low-Tension Currents. STÉPHANE LEDUC.

3. A New Form of the Electrolytic Interrupter.

4. Radioscopy and Radiography of the Abdominal Organs. A Béclère.

5. On Surgical Electrolysis and Galvano-Caustics. Th. Guilloz.

I. Galvanism and Muscular Force.—From his results the author concludes that "Voltaic electrisation of the vertebral column exerts a favorable influence upon muscular force, which is manifested less by the increase in work expressed in kilogrammeters than by the modifications produced in the form of the fatigue curves. By the greater number of ordinates and by their more gradual descent, the S-like form of the curve very strongly points to the preceding fact. But this favorable influence upon muscular force is produced not by electric stimulation only. Another stimulus, acting under similar conditions, such as a sinapism, has nearly the same influence upon muscular force."

2. Production of Sleep, etc.—An experimental research upon the lower animals in which the negative electrode is applied to the head and the broad positive to the back. A very rapidly interrupted continuous current of an E. M. F. of 16-30 volts is applied for a short time, the voltage being rapidly reduced. The author finds that it is possible to produce by interrupted low tension currents painless, instantaneous and complete inhibition of the cerebral hemispheres in animals, while the respiratory and circulatory centers are unaffected. Thus one produces a quiet and regular sleep that can be prolonged for several hours, and a general and complete anesthesia. Sleep occurs or disappears rapidly accordingly as the circuit is closed or opened. No after-effect follows the sleep. Prolonged and repeated sleep produces no apparent change in health.

3. Electrolytic Interrupter.—An illustrated description of a modified

Wehnett interrupter for use with alternating currents.

4. Radioscopy of Abdominal Organs.—A lengthy detailed paper devoted to the radioscopy and radiography of all the various organs of the abdomen and thorax. The author concludes that the X-ray method of examination constitutes an exceptional means for the investigation of the nervous system, a very valuable method for the abdominal organs which is particularly applicable for finding urinary calculi, and is a very admirable method for the physical examination of the thoracic organs. It is destined to rank in current practical medicine with auscultation and percussion, and

to occupy in time a more important place.
5. On Electrolysis.—A lengthy paper unsuitable for abstraction, that discusses electrolysis in its physical aspects and in its therapeutical appli-

cations.

R. H. CUNNINGHAM.

MISCELLANY.

REPORT OF A CASE OF PROGRESSIVE MUSCULAR ATROPHY (SPINAL) WITH MENTAL SYMPTOMS. R. Edward Garrett (Maryland Med. Jour., Oct., 1902).

Subject of report female, fifty-three years old. Patient for seven months at Maryland Hospital for the Insane. Symptoms at date of admission not sufficiently marked to justify positive diagnosis of progressive muscular atrophy. Has chronic nephritis. No hereditary predisposition. No luetic nor rheumatic history. Slight transitory pains about chest and shoulders. Case one of "upper arm type" with pronounced atrophy of muscles of trunk, particularly of arms, shoulders and chest. No changes observed in the legs. Feet and ankles edematous. Protrusion of head forgitis.

ward. Characteristic kyphotic attitude. No paralysis, but considerable weakness of affected muscles. No disturbance of speech, nor loss of control of sphincters. Gait normal. Patellar reflex absent. Pupils equal, reacting to light and accommodation. No optic nerve changes. No bulbar symptoms. At times choreiform movements of upper and lower extremities. Fibrillary tremor not detected. Mental symptoms considered to be part of the general disease, due to extension of spinal lesion to the brain. Patient feeble-minded, forgetful, unable to concentrate the attention. Vocabulary reduced to a few words. Mental impressions retarded.

J. E. CLARK (New York).

THE BLOOD, FROM A CLINICAL ASPECT. J. G. Emanuel (The Birmingham Med. Rev., June, 1901).

In tuberculous meningitis there is generally a leucocytosis. Given a doubtful case of typhoid or tuberculous meningitis, a raised count would negative uncomplicated typhoid and would be in favor of tuberculous menin-

J. E. CLARK (New York). A Case of Primary Pneumococcus Meningitis Simulating Puerperal ECLAMPSIA. Thomas Wilson and J. G. Emanuel (Birmingham Med. Rev., April, 1902).

The authors report an interesting case of pneumococcus meningitis, with autopsy, which had been previously diagnosed puerperal eclampsia. The patient, multipara, six to seven months pregnant, admitted to the Birmingham General Hospital in a comatose condition. For several days had complained of headache, followed by convulsive seizures and unconsciousness. Albumin and sugar present. No edema. Heart and lungs negative. Death on fifth day after onset. Post-mortem examination disclosed a purulent meningitis due to pneumococcus infection. Brain 41 ounces by weight. Surfaces of cerebrum, cerebellum, pons and medulla covered with purulent exudate. No changes observed in gray or white tissue upon gross section. Ventricles normal as to distention. No signs of tubercle, middle ear disease nor pneumonia. No septic focus. Bacteriological examination of exudate revealed diplococci resembling Fraenkel's pneumococci. Glycosuria was attributed to the meningitis in association with an enlarged and fatty liver.

J. E. Clark (New York).

MENTAL DISTURBANCE DURING THE PUERPERIUM. W, H, Hattie (Mon-

treal Med. Jour., Sept., 1902).
Ten per cent. of females admitted during past three years at Nova Scotia Hospital for treatment of "so-called" puerperal insanity. The writer, while allowing due consideration for inherited predisposition, believes that a large proportion of cases result from causes (toxic or infectious) which are generally preventable at this period. Prophylaxis in respect to the maintenance of healthy bodily nutrition, avoidance, so far as possible, of nervous stress, antisepsis, etc., are recommended.

J. E. CLARK (New York).

THE BLOOD IN CERTAIN CUTANEOUS, NERVOUS AND MISCELLANEOUS DIS-EASES, WITH REMARKS UPON THE ORIGIN AND SIGNIFICANCE OF THE Eosinophiles. Thomas R. Brown (Maryland Med. Jour., July, 1902).

In twelve observations, upon two cases of chorea, the writer states the total number of leucocytes was normal in every case, while the eosinophiles varied between 5.2 and 9.5 per cent., that is, there was always a distinct, and on some occasions a definite increase in these cells. In connection with Neusser's views, that "the supply of eosinophile cells in the blood is controlled by the sympathetic nervous system, and eosinophilia is the expression of sympathetic nervous irritation," the above is of especial interest. In three observations, on three cases of angio-neurotic edema, both leucocyte count, and percentage of eosinophiles, were practically normal. While

in two of the three observed cases of epilepsy, also reported upon, there was a leucocytosis, one slight, the other quite marked, 18,000. The eosinophiles were present to an extent of one per cent. in two of the cases, and five per cent. in the third, a case with a leucocytosis of 10,500 and associated with incipient senile dementia. Burr and Murphy, separately, in chorea, have shown that an anemia is usually present. Murphy believes that chorea is the cause, the blood changes being the effect.

Krainsky considers the blood in epilepsy to be increased as to its toxicity. Herter holds divergent views. Jenks believes there is a marked increase of large mononuclears, prior to the epileptiform seizures, while Capps and Burrows have found that a leucocytosis, often of a very marked

degree, is associated with convulsions, whatever the cause.

Kappert, as a rule, in organic and functional nervous disease, found a moderate eosinophilia. Neusser describes a similar condition in various nervous disorders J. E. CLARK (New York).

Post-Operative Insanity. Alex. Pilcz (Wien. klin. Woch., Sept. 4, 1902). Of the small number of cases of insanity following surgical operation, some may be referred to a previous syphilitic infection, others to alcoholic poisoning, or suddenly enforced abstinence from alcohol. Chloroform or iodoform are possible causal agents. Senile patients sometimes develop mental disturbances as a result of loss of blood, narcosis, antiseptics and other irritations. Among children, except in cases of sepsis, insanity is practically unknown. Among cases with definite degenerate disposition or bad heredity, insanity not infrequently develops. Hysteria is especially liable to give trouble. The general condition at the time of operation is the most important question in the production of acute post-operative insanity. Cachexia of any sort, malnutrition, gastro-intestinal disorders have definite influence. Psychical factors are important, such as fear of operation, ex-

citement, or mental depression.

After certain operations, such as castration, the loss of an "internal secretion" has been held to be the cause of mental disturbance. The author believes that the cause is more probably reflex psychoses, such as might have occurred from other circumstances. In most cases iodoform poisoning or slight or severe sepsis is the cause of mental disturbance. In a fatal case of Voisin, after ovariotomy with wild delirium, an acute hemorrhagic meningo-encephalitis was found at autopsy, though the wound was in good condition. A case of Seeligman, of acute delirium following a gynecological operation, large doses of opium had caused constipation and secondary auto-intoxication. Auto-intoxication and uremia are active and not infrequent causes. Excessive pain sometimes causes transitory psychosis. The clinical type of the insamity may to form poisoning simulates acute delirium. The hysterical cases develop mysterical delirium, "folie des dégénerés." Old people develop typical senile W. B. Noves (New York). The clinical type of the insanity may vary from mania to paranoia. Iodo-form poisoning simulates acute delirium. The hysterical cases develop hys-

Book Reviews

PSYCHIATRIE FÜR AERZTE UND STUDIRENDE. Bearbeitet von Dr. med. Th. ZIEHEN, O. Professor an der Universität Utrecht. Zweite Auflagle. S. Hirzel. Leipzig. G. E. Stechert, New York. Sixteen marks.

In the application of good common sense physiological psychology to the study of psychiatry this work stands out as one the ablest exponents. Founded as it is largely on the author's well known and widely employed "Leitfaden" the two make a coherent whole as far removed from the oldfashioned metaphysical psychiatry as it is possible to remove any study that involves so much of the terminology of that pursuit of the earlier students of philosophy. On the point of classification we believe the author to be extremely logical, particularly from the standpoint of the physiopsychological school.

The work is divided as most of our works on psychiatry are into the General and Special portions. Under the head of General Symptomatology Ziehen discusses in order, disturbances of sensation, perception, memory, intellectual tone, and feeling tone, association of ideas and disturbances of conduct. Bound intimately with these general sub-chapters the somatic ac-

companying symptoms are taken up.

Chapters in the General Development of the Psychoses, Diagnosis, Etiology, Prognosis, Pathological Investigations and of Therapeutics close the

first portion of the volume.

Under Special Psychopathology there are considered (1) the Psychoses without Defect of Intelligence, including the simple affective psychoses, mania and melancholia, the intellectual psychoses with various types of paranoia, confusional states, fever and toxic deliria, and the psychopathic constitution; (2) the Compound Psychoses, periodic and nonperiodic, the defectives, born and acquired. Following these are a few pages devoted to general considerations.

It is impossible to enter completely into an analysis of the author's various lines of demarcation. They have their analogues in the cases seen in private and hospital practice, and the systems outlined are remarkable

in the acuity of their differentiation.

The work is deserving of a carefuly study, and it can be most heartily commended as an earnest and comprehensive work on psychiatry.

JELLIFFE.

PSYCHOPATHOLOGICAL RESEARCHES. STUDIES IN MENTAL DISSOCIATION. By Boris Sidis, M.A., Ph. D., Director of the Psychopathological Laboratory. Published under the Auspices of the Trustees of the Psychopathic Hospital, Department of the New York Infirmary for Women and Children. G. E. Stechert. New York, London, Leipzig and Paris.

This is an extremely interesting and suggestive volume that merits an extended notice. The space at our command, however, does not permit us to do it full justice. There are eight separate studies in the volume as follows: Some General Remarks Concerning Psychopathological Research, by Boris Sidis; Mental Dissociation in Functional Psychosis, by Boris Sidis and William A. White, M.D.; Mental Dissociation in Alcoholic Amnesia, and "in Psychic Epilepsy," by William A. White; Mental Dissociation in Depressive Delusional States, by Boris Sidis and George M. Parker, M.D.; Mental Dissociation in Functional Motor Disturbances, by George M. Parker, and Mental Dissociation in Psycho-motor Epilepsy, by George M. Parker.

Sidis makes an interesting gradation of affections of the psyche into three great classes, the which pass into one another by imperceptible degrees, these he styles: functional psychosis, functional neuropathy and necrotic neuropathy. Disaggregation and disintegration, however, may be present in different degrees in varying groups, and neurone systems. His complete formula being expressed as follows: "The symptomatic side of disease, the total psychomotor aspect of the pathological process, is a function of location, number, and degree of dissociation or degeneration. The total complex of psychomotor manifestations depends on the location and number of neurone aggregates involved and on the stage or degree of the pathological process of disaggregation, dissociation or degeneration."

With reference to the attitude towards the insanities, he says: "Functional psychosis, functional insanities, should become a special research field of the psychopathologist. Functional psychosis is specially characterized by psycho-physiological disaggregation where synthesis is still possible. The only way of restoring the disturbed equilibrium is to bring about a synthesis of the disaggregated groups with the functioning systems of the upper active personality." To bring makes use of his intermediary states. To bring about these syntheses the author

Throughout the book the recognition of the so-called subconscious life is imperative. Upon its existence the arguments are founded and the work in reality is an excellent study of the subconscious physio-psychological processes, well worth the reading. TELLIFFE.

ZUM STUDIUM DER MERKFÄHIGKEIT. Experimental-psychologische Untersuchung. Von Dr. Aug. Diehl, Nervenarzt in Lübeck. S. Karger, Berlin.

The study of the power of correct observation and firm memory grasp is of interest and of importance not only to the psychologist, but to the jurist, and the physician—not to mention the everyday business man.

From the psychiatric side there has been a distinct lack of criteria for the measurement of normal ability in this series of faculties. This lack

the present study in part fulfills, and does so very well.

It is a psychological study primarily with a very practical trend, and is well worth permanent preservation in its present small monographic SMITH. form.

GENERAL PARESIS. PRACTICAL AND CLINICAL. By Robert Howland CHASE, A.M., M.D., Physician-in-Chief Friends Asylum for the Insane,

P. Blakiston's Sons & Co., Philadelphia.

The author's object in devoting an entire volume to this disease is distinctly sensible. The general practitioner does not recognize general paresis as soon as it can be recognized, and in consequence many calamities occur that might be averted. There can now be no excuse for the general practitioner with such an excellent manual as this for his guidance, since it has been from this practical point of view that the work has been written. The book is particularly rich in illustrative cases. These cover an immense field of experience, and put the reader en rapport with very dissimilar types of the affection.

It cannot fail to be of great service, even more than a much more S. E. J.

technical presentation of the subject.

LES PARALYSIES DES NERFS PÉRIPHÉRIQUES, ET LA SYSTEMATISATION DE CES NERFS. Par Dr. CHARLES VIANNAY, Ex-interne des Hopitaux de Lyon, Préparateur du Cours de Médicine Operatoire. J. B. Baillière et Fils. Paris, France. 1903.

This is a small monograph of 150 pages, bearing on the subject of peri-

pheral paralysis.

The first half takes up a general study of the topography distribution and systemization of the chief nerves of the arm and leg distribution. This is discussed not from the purely anatomical standpoints, but from the side of its application in the study of peripheral palsies.

The second half deals with the clinical side of peripheral nerve affections, first discussing the generalities, etiology, etc. Radial, median, cubital and sciatic palsies are taken up in turn, the motor, sensory, and trophic

disturbances each receiving special consideration.

The work is concise and practical and highly suggestive, and is well worth a careful reading.

Jelliffe.

The Force of Mind or the Mental Factor in Medicine. By Alfred T. Schofield, M.D., M.R.C.S. P. Blakiston's Son & Co., Philadelphia.

To those who have watched the trend in certain lines of philosophical development this volume will not come as a surprise. It is a logical outgrowth of much thought that has of late years been centered on things psychical.

Not many years ago, it was considered by some a sign of superior intelligence to deprecate this aspect of thought, but that time has gone by, and whereas the narrow-minded never really becomes other than one who has the "will to disbelieve" he now finds himself at a loss for his lack of under-

standing of now well recognized and true phenomena.

Coming to the volume at hand, however, is it one that will commend itself as an authoritative expression of modern day science on the subject of mind cure? In a sense it is not, but withal it is an extremely interesting, though heterogeneous, and, we fear, much jumbled, collection of opinions and facts, the which, be it said to the author's credit, is to him a pal-

pable fact.

The book is divided into two parts. Part I. considers "The Action of the Mind in Causing Disease," and Part II. "The Action of the Mind in Curing Disease." In Part I. the author considers the force of mind, the unity of mind, psycho-pathology, mental factors in organic and other diseases, causes and symptoms of functional nerve disease, etiology of hysteria, and phenomena and illustrations of hysteria. The chapter headings of part II. are psycho-therapy, the vis medicatrix naturae, some varieties of mental therapeutics, illustrations of the curative effect of mind, mental therapeutics in functional nerve diseases, therapeutics of hysteria, and practical conclusions.

The work is largely made up of extracts and sentences from the published work available in the English language. There is almost no reference to and apparently little acquaintance with the vast literature of the French authors, who, of all the students of mental phenomena, have advanced the sum of human knowledge in this branch. Thus Charcot and Janet are not even mentioned in the author's extensive bibliography. Thus it may be seen that the work is more of a patchwork than an authoritative utterance, but it is an attempt in the right direction and is worthy of commendation.

Mews and Motes

One of the three new buildings being erected at the University Hospital, at Ann Arbor, Michigan, is to be a psychopathic hospital. The earliest stages of all forms of acute psychoses are to be studied here. The State appropriated \$50,000 for its erection and will complete its equipment with the best modern scientific apparatus. An annual appropriation will be made by the State for its future maintenance.

Dr. John Fitzgerald, Superintendent of the Rome Custodial Asylum, has resigned this position to accept the one of General Medical Superintendent of the four general hospitals of Kings County.

Dr. Veavianos, of Athens, Greece, has undertaken the editorship of a new journal of psychiatry and neurology and allied subjects.

THE AMERICAN ASSOCIATION FOR THE CURE OF INEBRIETY held its thirty second annual meeting in the hall of the Washington Home, Boston, Mass., on December 18, 1902.

A RECENT MENTAL STUDY of four hundred mendicants in Breslau showed the following: One-half of the entire number presented a neuropathic history, such as alcoholism (29 in 100), epilepsy, hysteria and various other psychoses. The intelligence was of a low order in all; (53 out of 100) had not obtained even a preliminary education; one-third showed arrested development, congenital or post natal. Acquired diseases were noted in 6 per cent.; general paresis was the most prominent of the psychoses. The majority (65 per cent.) were chronic alcoholics.

The managers of the New Jersey State Colony for Epileptics at Skillman report after making a State census that there is one epileptic to every five hundred of the State population, and therefore ask for a substantial increase in legislative appropriation to enlarge and improve the present institution, which cares for only eighty-five patients. Since 1898 nine patients have been discharged cured.

It is expected that the New York Commission of Lunacy will ask for a material increase of the annual maintenance fund for the State Hospitals under their care for the coming fiscal year. The appropriation for the purpose including the necessary building construction, was \$4,165,886.66 for 1902, which was \$340,000 less than for the year 1901. However, a large balance used from last year's funds is not available this year, hence the necessity of an increase.

Dr. S. Weir Mitchell is to deliver the University Day oration in commemoration of Washington's birthday at the University of Pennsylvania.

THE COMMITTEE selected by the last legislature of Pennsylvania, to erect the Homeopathic State Hospital, met in Philadelphia on December 10, to open bids and proposals for various sites for which the State appropriated \$50,000. The coming legislative session is to be asked for a substantial sum to erect the buildings as speedily as possible to meet the long existent demand for such an institution.

THE PLANS which provide for the administration building of the Maryland Asylum and Training School for Feeble-minded at New Owings' Mills have been completed and construction is to begin at once. The building is to be for administrative officers and teachers.

For State Hospital Co-operation.—The aims and plans of the Pathological Institute of the New York State Hospitals were discussed by Dr. Adolf Meyer in a paper which he read before the physicians on Ward's Island recently. The institute was found by Dr. Carlos Macdonald and reorganized last year. As to what must be accomplished Dr. Meyer said: "We must make the work of the physicians as medical as possible, abolish all regulations which derange their work; in short, all and everything that makes a young assistant put trivialities above medical accuracy. We must investigate how large a force is required to reach a standard of work on which we can agree. We must make somebody responsible for the accuracy and efficiency of the medical work which the superintendent cannot possibly supervise well enough where he is responsible for all the administrative burdens; and this person, or these persons, let us say the older members of the staff, must be officially obliged to be able to be helpers to the younger members, sources of instruction and stimulation." Dr. Meyer argues that medical schools do not provide the necessary training for actual hospital work and that assistant doctors in the hospitals come unprepared for special work. "Under these conditions," Dr. Meyer says, "the hospital system must help itself." It has been urged that the prime duty of the institute should be original research work and the discovery of better methods of prevention, treatment and cures. This, he says, is the ultimate object.

NEW SUPERINTENDENT OF BELLEVUE.—The Trustees of Bellevue and allied hospitals have invited Dr. William Mabon, the Medical Superintendent of the St. Lawrence State Hospital at Ogdensburg, to accept the position of Superintendent of the hospitals under their charge. Dr. Mabon graduated from the Bellevue Hospital Medical College in 1881. After several years spent in private and hospital practice, he entered the service of the State in 1887, having received the appointment of Assistant Physician at the Utica State Hospital for the Insane. He remained at Utica until October, 1895, when he was appointed Medical Superintendent of the Willard State Hospital. This hospital was in need of reorganization, and it was believed that Dr. Mabon's experience and training and executive ability qualified him for the work. In one year the hospital was placed upon a sound administrative basis, and in October, 1896, the managers of the St. Lawrence State Hospital at Ogdensburg called him to the Superintendency of that hospital to succeed Dr. Wise, who had been appointed President of the State Commission in Lunacy. Under Dr. Mabon's management, the reputation of the hospital as leading in all the best methods for the treatment of the insane has been fully maintained. With the consent of the State Commission in Lunacy and of the State and Municipal Civil Service Commissions, Dr. Mabon now returns to New York City, and will take charge of Bellevue and its allied hospitals on January 1, 1903. In view of his lay experience in the State service, and his proved administrative capacity, it is confidently expected that he will raise these hospitals to the highest state of efficiency. In addition to his executive duties, Dr. Mabon will also act as consulting physician to the Pavilion for the Insane of Bellevue Hospital.

Annex to School for Feeble-Minded Asked For.—The board of directors of the Pennsylvania Training School for Feeble-Minded Children has decided to petition the legislature for \$150,000 to build an annex for housing unimprovable cases. It is proposed to place the annex five miles from the main building. Citizens of Delaware county do not favor the plan, as it means more property exempt from taxation. This county, it is stated, now has more land for public institutions exempt from taxation than any other county in the State.

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Nervous and Mental Disease

Original Articles.

A CASE OF COLLOID DISEASE OF THE BLOOD VESSELS OF THE SPINAL CORD.¹

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The following case is unique in my experience and I have been unable to find any other like it in the literature. As the title indicates, it is one of focal lesion of the cord due to colloid disease of its blood vessels. The history is briefly as follows:

M. H., age forty-three, white; occupation, domestic.

Family history—Father and mother both killed by accident;

otherwise negative.

Previous history—Has had the various diseases of child-hood. Menstruation began at eighteen years, then ceased for a year, returned and occurred regularly every two weeks for two years. Subsequently it continued regularly every third week up to the present time. Suffered from displacement two years ago from which she recovered under treatment. Four years ago she had a slight attack of influenza, characterized by severe pains in neck, back and chest. About this time also was attacked by diarrhea which patient attributed to exposure to cold and wet. She characterized the diarrhea as uncontrollable. She continued to be up and around, however, and attended to her work. At the end of a year the diarrhea ceased and she began to slowly lose power in both hands, especially in the right. She was able, however, still to walk without difficulty.

¹Read at the annual meeting of the American Neurological Association, June 5, 6 and 7, 1902.

About a year later she began to have pains in the back, muscular rheumatism and stiffness of the joints. Her condition at the time of admission was as follows:

She stood with difficulty apparently because of stiffness in the joints of the legs and feet. There was stiffness of all of the joints, particularly of the smaller ones. There was a slight contraction of the middle and ring fingers of the right hand. Ankle-clonus was not noted, nor was there noted any sensory loss. The general physical examination was negative, save that both sounds of the heart appeared to be slightly roughened and there was a partial opacity of the left cornea, the result of scarlet fever.

Her condition presented from time to time little change. Examined a year later, it was found that the muscles of the shoulder had become distinctly atrophic, the fingers were contracted, the legs spastic, there were present exaggerated kneejerks and ankle-clonus. Ankle-clonus was more marked on the right side. There was also a slight scoliosis. The gait was spastic, there was no involvement of the bladder or bowels and no trophic lesions.

There was now noted a marked anesthesia on the outer aspect of the left arm and left forearm. The thermal sense was also involved in this area; the patient made repeated mistakes when tested for hot and cold. No sensory losses were noted elsewhere. An examination of the eye at this time revealed the pupillary reactions to be normal. No view of the fundus of the left eye could be obtained because of opacity of the cornea. In the right eye the fundus was normal. An examination of the urine was negative.

Little by little the spasticity and contracture of the arms and legs became more and more pronounced, until in March, 1898, she became unable to walk. The loss of the power to walk was exceedingly gradual. At various times she suffered from pain in the back and from severe pain in the arms and legs. The bowels also became markedly constipated and in addition there was difficulty in micturition; the patient was obliged to wait for quite a while before the bladder could be emptied and at times it became necessary to use the catheter. No trouble was noted with speech or deglutition. She complained of numbness of the right hand and of the right leg.

Examined in detail, July 29, 1898, she revealed the following: The patient is bed-ridden. She cannot move the right leg at all. She can flex and extend the toes of the right foot a little. She can barely lift the left leg from the bed, but can flex and extend the left leg feebly. She can abduct and adduct the left thigh a little. She can move the left foot and toes fairly well.

She cannot move the right arm at the shoulder at all, but can flex and extend the right arm feebly. There is almost no grip. She can move the left arm at the shoulder quite well and can flex and extend the left forearm quite well; also pronate and supinate the left forearm. There is no palsy of the face. The tongue is protruded straight and is not wasted. There is marked wasting of the intrinsic muscles of both hands, arms and forearms. There is no wasting of the legs or thighs. Insteps of both feet are very high. Patellar jerk is very marked on both sides. Patellar clonus is present on both sides. Anklecionus is marked on the right side, slight on the left. Plantar

jerk present on both sides.

The sensory losses were now found to be more marked:— Tactile sensation is abolished over the whole left upper extremity. There is no sensory loss over the right upper extremity except some impairment of sensation over the dorsal surface of the hand and fingers and a doubtful impairment over the palmar surfaces of the fingers. There is complete tactile loss over the left side of the chest, covering an area bounded above by the clavicle, below by the sixth rib, laterally by the middle line of the body. In the lower extremities, sensation is intact. An area of tactile anesthesia is noted, about two inches in diameter, extending downward and inward from the right nipple. There is tactile loss also on the left side of the neck; the face and ear, however, are not involved. On the upper portion of the back, on the left side, there is a complete tactile loss over an area extending from the junction of the neck and trunk above, downward to about two inches below the angle of the scapula and from the spine to the anesthetic area on the left side of the chest with which it merges.

The pain sense also reveals marked anomalies. There is complete loss to pain over the whole of the left upper arm, posterior surface of the left forearm and on the back of the left hand in an area corresponding to the first, second and third metacarpal bones and their respective fingers. There is a partial loss of the pain sense over the anterior surface of the left forearm, over the dorsal and palmar aspects of the hand in the region corresponding to the fourth and fifth metacarpal bones and over their respective fingers. There is complete loss of the pain sense over the left chest covering an area bounded above by the first interspace, below by the fifth interspace and internally by the middle line of the body. The pain sense was intact over the right side of the chest, the right upper extremity and both lower extremities. On the upper portion of the back, on the left side, there is complete loss of the pain sense over an area extending from the spine of the scapula down to the level of its

angle: it does not extend entirely to the spinal column and laterally merges with the area of pain loss on the left side of the trunk. Partial loss of pain sense extends from the posterior border of the scapula over to the spine and downward as far as the limits of the area for tactile loss.

The thermal sense is abolished entirely over the left arm and posterior part of forearms, also on dorsal aspect of hand over first, second and third metacarpal bones and their respective fingers. It is almost entirely abolished over the area for loss of pain on the left chest; here hot and cold are confused, more usually cold being mistaken for hot. Over the anterior surface of the left forearm, there is a partial loss and confusion. Over the fourth and fifth metacarpal bones and their respective fingers, of the left hand, both on the dorsal and palmar aspect, there is some impairment, but hot and cold are usually called correctly. Over the posterior portion of the trunk, the thermal loss practically follows that of pain, but in addition includes the lower half of the ear and margin of the face about the angle of the jaw. It also extends toward the spine to a line about half way between the border of the scapula and the spine. From this line over to the spine, hot and cold can be distinguished. From one-half to one inch below the angle of the scapula down to the limit of the area of tactile loss, there is a partial loss of thermal sensations. This corresponds to the area for partial painful loss. The thermal sense is intact over the whole of the left thigh and leg, also over the right thigh. From knee down, over the whole of the right leg, there is an impairment which seems to vary at different parts, but is most pronounced over the internal malleolus.

November 9, 1898. Patient's condition practically unchanged. Complains now of tenderness in the ankles in addition to weakness. States now that she has always suffered considerably from pain in the joints and that this pain was made worse on motion. Mental condition somewhat obtunded so that she may be in error with regard to the past history of pain.

Ophthalmoscopic examination at this time again gave a

negative result.

November 25, 1898. Patient now complains of a sensation of constriction about the waist. There is also diffuse tenderness to pressure over the calves, thighs and both arms. This tenderness is quite pronounced.

On November 30, 1898, the patient attempted to get out of bed. She fell, striking her head, causing a wound of the scalp half an inch in length. It was dressed antiseptically and subsequently healed promptly.

From this time on her condition changed gradually and al-

most imperceptibly.

She was again carefully examined on February 28, 1900. The symptoms had been very slowly progressive and but little change had taken place since the previous examinations. The

following note was made:

Muscular wasting is now somewhat more pronounced. She cannot move the right arm at the shoulder. She can move it to a slight extent and flex it at the elbow. She can neither flex nor extend the fingers which are held in a position of semiflexion. The muscles of the arm, forearm and hand are all somewhat atrophied. The biceps jerk is increased and the muscle jerks of the forearm are increased. Sensation is quite well preserved in the right arm. She cannot move the left arm at the shoulder. She can flex and extend the left elbow, flex and extend the left fingers, but all the movements are weak. There is slight wasting of the muscles of the left hand and left forearm. The left biceps jerk is absent; the muscle jerk is slight. There is anesthesia of the left arm and left chest, the areas corresponding closely with those determined at previous examinations.

Both legs are edematous. Left leg can be slightly extended at knee, ankle and toes. Right leg can be flexed at knee very slightly, almost no movement in hip of left side, none in right

hip.

Sensation to touch preserved in both legs and there is some hyperesthesia. There is no wasting of the legs. She localizes touch well in legs and feet. No fibrillary twitchings. She confuses heat and cold on both legs, sometimes answering correct-

ly; at times wrongly. Edema of the feet.

Both knee-jerks are exaggerated. On the left side distinct ankle-clonus, also on right. Stroking either sole causes flexion of toes. No extension. Achilles jerk preserved on either side, but slight. Striking the sole causes flexion of entire foot. On the abdomen at right side, sensation to touch normal; on the left side, normal up to line of ribs. Heat and cold are felt perfectly well on abdomen. Marked constipation. Good control of the bladder. Occasionally dribbling.

Abdomen shows a freely movable irregular tumor, probably

feces. There is no deformity of spine.

May 3, 1900. Patient is growing weaker. Diuretics have lessened the edema of lower extremities. Patient is very rest-

less at night.

October 1, 1900. Patient is in very poor condition this morning. For past few days has had severe diarrhea with some blood in the stools; also considerable pain and bearing down; is very weak.

October 2, 1900. Has seemed much worse today. Pulse cannot be felt at the wrist and patient bathed in a cold sweat, with sub-normal temperature. During greater part of day has been unable to swallow any medicine or nourishment.

She died October 3, 1900.

The urine had been repeatedly examined during life and always with a negative result except with an occasional low specific gravity. Examination of the sputum had also yielded a negative result.

The body was removed from the hospital before an autopsy could be held. The resident physician, Dr. E. T. Robinson, followed the body to a distant part of the city and under discouraging circumstances succeeded in securing the spinal cord. Unfortunately no general post-mortem could be held. Microscopical examination revealed the following changes in the cord.

Sections from the upper part of the cervical swelling. central portion of the spinal cord is much disintegrated so that the tissue in some parts has entirely disappeared; in other areas the tissue is very loose. This area of softening extends into the lateral column of each side, but more into the left than into the right lateral column. The crossed pyramidal and direct cerebellar tracts are degenerated. A glassy homogeneous infiltration in patches is seen in the central region of the cord, in the posterior columns, and in the lateral columns, especially in the left lateral column. This infiltration in some areas has replaced the normal tissue of the cord; in others it has penetrated between the nerve fibers leaving them more or less widely separated from one another and embedded in a homogeneous glassy matrix. Some much swollen axis cylinders are seen here and there in this infiltration. The walls of many of the intramedullary blood vessels are much thickened and have undergone a hyaloid change and in some more than one lumen is found. Disseminated sclerotic areas are found in different parts of the transverse section and not always in association with thickened blood vessels. Round-cell infiltration is not very distinct either in the cord or pia, although here and there a little infiltration may be seen about a vessel. Many of the nerve cell-bodies of the anterior horns, stained by ammonium carmine, are atrophied and with few or no dendritic processes. The anterior and posterior spinal roots appear to be normal, although the posterior possibly may be slightly degenerated. This, however, is very doubtful. Sections of the spinal cord above the upper part of the cervical swelling were not obtained. Sections from the middle part of the medulla oblongata are normal, except that the anterior pyramids were destroyed when the spinal cord was removed at the necropsy.

Sections of the cervical region taken from lower levels than those described above, present a similar picture. The nerve cell-bodies of the anterior horns, especially of the left horn, are very distinctly degenerated. Here and there a slight roundcell infiltration, about an intramedullary blood vessel, is found. The homogeneous infiltration of the cord—very pronounced at this level also—stains a light chocolate color by the Weigert's hematoxylin method and pale pink by ammonium carmine.

Sections from about the eighth cervical region are very similar to those described from higher levels, although the altera-

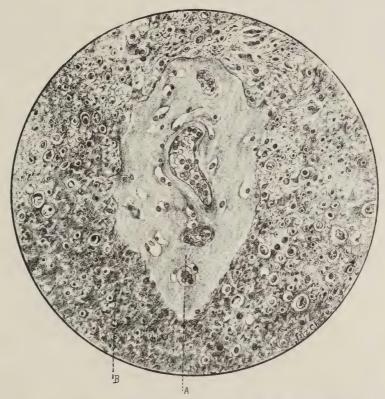


Fig. 1. Section from the upper portion of the cervical region. A, Blood vessel showing colloid-like degeneration of its walls. Three or four lumina are found within this vessel. B, Sclerotic portion surrounding degenerated blood vessel.

tion, except in the crossed pyramidal tracts, is less intense. Here and there a small recent hemorrhage is seen within the spinal cord. Sections from this level stained by the Marchi method do not show any recent degeneration.

The degeneration of the crossed pyramidal tracts extends through the thoracic region into the lumbar.

The microscopical work was done by Dr. Wm. G. Spiller at

the Pepper Clinical Laboratory.

It is to be regretted that the portion of the spinal cord above the cervical swelling was not obtained, but the findings are sufficient to explain the symptoms. Throughout the cervical swelling many of the blood vessels have undergone a hyaloid change, and a glassy infiltration, resembling that described by Ober-



Fig. 2. Section from about the eighth cervical region. A, Homogeneous infiltration, staining light chocolate color by the Weigert hematoxylin method. B, Posterior horn and posterior commissure infiltrated by the homogeneous exudate. C, Posterior columns.

steiner as colloid infiltration, has occurred, separating and destroying the normal tissue of the cord and causing softening of the cord and secondary degeneration.

The only reference bearing upon this case, of which I have any knowledge, is that of Alzheimer², who describes two cases

²Archiv f. Psychiatrie, Volume 30, page 18.

of colloid degeneration of the vessels of the brain. In one of these the symptoms were those of paresis, and Alzheimer regarded the case as one of paresis complicated by colloid disease of the blood vessels. In the second, the symptoms were those of brain tumor. The patient had during life choked disc, left-sided paralysis, convulsive attacks limited almost exclusively to the left side of the body, and headache. Numerous foci of softening and degeneration were found in the right hemisphere, in the right basal ganglia and in the right crus, together with colloid disease of the vessels.

In the case here presented, a large focus of softening and infiltration was present in the upper cervical portion of the cord, besides there were areas of softening and infiltration present in various other portions as described. Colloid disease of the blood vessels of the central nervous system, presenting either diffuse or focal lesions, must be regarded as excessively rare and the case before us is unique. During life no definite diagnosis had been made. Early in the case syringomyelia and later on tumor of the cord seemed probable.

ARTERIOSCLEROSIS OF THE SPINAL CORD.1

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It is a well known fact that arteriosclerosis is a condition which may occur in many parts of the body; in the vessels of the muscular apparatus as well as in those of the internal organs. Heart, lungs, stomach, liver, kidneys, *etc.*, may become the principal seat of this affection, and many different types of the disease have been described accordingly.

The arteries of the central nervous system are not exempt from this affection, but may on the contrary form the starting point, or perhaps the only seat of the disease. Sclerosis of the cerebral arteries is a comparatively frequent occurrence, and its clinical manifestations, the physical and mental symptoms, are sufficiently known to lead as a rule to a correct diagnosis *intra vitam* without difficulty.

Arteriosclerosis of the spinal cord, however, is a condition which is only rarely diagnosed. The literature on this subject is extremely scanty; most textbooks not even mentioning it. Having been especially interested in this subject for several years past, I have collected a number of cases in which arteriosclerosis of the spinal cord formed the principal and sometimes the only feature of the disease.

As to the etiology of arteriosclerosis in general a great many conditions have been mentioned by various authors. Infectious diseases, chronic intoxications, abnormalities in metabolism, heredity, old age, etc., were held responsible for the manifold types of arteriosclerosis. It is not my intention to discuss these various factors as to their relative value in the production of the disease. There is, however, one point which seems to me of special importance in connection with this subject. In spite of the many conditions which are considered of etiological significance, there remains a comparatively large number of cases in which arteriosclerosis can not be attributed to any real cause, so that we must assume a primary tendency on the part of the vascular apparatus

¹Read at the annual meeting of the American Neurological Association, June 5, 6, and 7, 1902.

to undergo degenerative changes. It is true, heredity has been found to play a certain rôle in this class of cases, but what else does that mean than that the individual is endowed with abnormal blood vessels *ab ovo*. In fact arteriosclerosis has been observed in infants only a few months old. I have seen sclerosis of the peripheral arteries and those of the heart in a number of young men between twenty and twenty-five years of age. While arteriosclerosis is extremely common in old age, we have to deal here with premature changes of the blood vessels, due to a congenital abnormality of the circulatory apparatus. This then accounts for the manifold idiopathic diseases of the internal organs and the central nervous system based on degenerative lesions of the arteries.

In order to obtain as pure a clinical picture as possible of arteriosclerosis of the spinal cord, I have carefully eliminated all those cases in which even a suspicion of syphilis had to be maintained. Most cases which I have collected belong therefore in that category of idiopathic abnormality of the blood vessels.

Considering the anatomical basis of the disease it is evident that a sharply defined clinical picture cannot be given. It goes without saying that any artery or any group of arteries may become the principal seat of the lesion, and that according to the localization and intensity of the affection the symptoms will vary. Just as the clinical picture of spinal syphilis is characterized by the atypical complex of symptoms, so is arteriosclerosis of the cord a disease which may offer a great variety of clinical manifestations. In spite of this, however, there are certain clinical phenomena which will enable us to recognize this morbid condition of the spinal cord during life, and to differentiate it from other diseases of this organ.

One characteristic feature of spinal arteriosclerosis is the fact that the cells of the anterior half of the cord are much more apt to become affected than those of the posterior part. This is probably due to the peculiarity of the blood supply of this organ. The anterior spinal arteries are much less numerous than the posterior ones, and while the anterior arteries anastomose in such a way as to form one longitudinal vessel running over the entire anterior surface of the cord, the anastomosis of the posterior arteries produces six longitudinal vessels running parallel all the way down from the upper part of the cord to the conus. This

abundant anastomosis of the blood vessels immediately before their entrance into the substance of the cord may afford a greater safeguard against an increased blood pressure, and in case of occlusion of one of the smaller arteries the anastomosis allows a ready blood supply from other sources. Of the anterior half of the cord it is again the lower part which becomes more frequently the seat of the disease than the upper part. The cause for this may lie in the fact that here the blood supply is still more direct than in the cervical and dorsal regions. The one artery which accompanies the sciatic plexus, the arteria magna, supplies the anterior gray matter of the entire lumbar and sacral cord, while in the upper part the spinal arteries are more numerous. The arteria magna has the largest caliber of all the spinal arteries, and the blood passes more directly from this vessel into the substance of the cord than at any other place. The arterioles of the anterior horns in the lumbar and sacral region have therefore less protection against an increased blood pressure than any other part of the spinal cord.

As a consequence of this condition we find in arteriosclerosis of the cord motor and trophic disturbances much more frequently than sensory symptoms, the latter in fact being rather rare in this affection. The existing manifestations again are more common and more marked in the lower than in the upper parts of the body.

The motor symptoms consist of gradually increasing weakness, characterized by fatigue after moderate exertion such as standing and walking, combined with a slight tremor of the head and of the upper and lower extremities. The gross muscular power gradually diminishes more and more, the gait becomes dragging and difficult, until finally, in the more severe cases, it ends in absolute inability to walk. There is, however, no atrophy as a rule, and the muscular tonus retains its normal condition up to a late period of the disease. The patellar reflexes may be exaggerated at first, then become sluggish, and may be lost entirely in the later stages. A slight tremor of the lower extremities may cause a moderate swaying of the body in the standing position, which, however, is different from the typical Romberg symptom. These may be the only symptoms of the disease for a long time; there are no sensory disturbances. Perception to outer stimuli remains unimpaired. and there is no pain. The reflexes of the bladder and rectum are normal. Sooner or later the other organs become affected in a similar way, and the patient may die from a cerebral hemorrhage or an intercurrent disease. This clinical picture is so often found in old age that it has frequently been considered a normal condition of this period of life. Unsteadiness of upper and lower extremities and gradually increasing impairment of gait and muscular power seem so common in old people, that one is often inclined not to look upon these phenomena as a morbid condition at all. But there are undoubtedly a great many old people who do not manifest any of these symptoms, and on the other hand, we not infrequently meet with these symptoms at an early period of life, so that it seems hardly justifiable to consider this condition a physiological process even among the very old.

Trophic disturbances manifest themselves in malnutrition of the skin, and of the mucous membranes, bones and joints. Glossy skin is a frequent symptom in these cases; the nails may become brittle, or may offer the conditions of onychogryphosis or alopecia unguium. There may be a tendency on the part of the skin to undergo ulceration and gangrene. A certain percentage of those cases known as erythromelalgia and Raynaud's disease are undoubtedly due to lesions in the trophic centers of the cord. The long bones may suffer from malnutrition, and possess a tendency to undergo spontaneous fracture. Certain forms of joint disease arthropathia and hydrops articulorum intermittens are found in this condition.

It is true that it is very difficult and often impossible to decide in individual cases whether these trophic disturbances are really due to lesions of the cord or to morbid changes in the peripheral arteries, especially as both conditions may occur simultaneously. There is, however, a considerable number of cases in which the peripheral vessels were found in perfectly normal condition, and where the cause had necessarily to be attributed to morbid changes in the trophic centers.

The diagnosis of spinal arteriosclerosis may sometimes offer considerable difficulty, especially when it occurs in younger individuals, and when its clinical manifestations resemble those of the well known systemic diseases. Although, as mentioned before, sensory symptoms are comparatively rare in arteriosclerosis, they may nevertheless occur. In the first place they may be produced by complicating peripheral lesions, and secondly, it is

of course not impossible for the posterior part of the cord to be involved also. The clinical aspect of cases of this kind may closely resemble those of tabes. Here it is the history of the case, the absence of syphilis, arteriosclerosis in other parts of the body, and the condition of the pupils, which may be of value in the differential diagnosis. The Argyll-Robertson pupil does not belong to arteriosclerosis. If, on the other hand, the case is complicated by sclerosis of the cerebral arteries, we may have a difference in size of the pupils, or an atrophy of the optic nerve, leading to complete blindness. This latter condition, which is often considered one of so-called idiopathic optic atrophy, is by no means rare in cerebral arteriosclerosis, and can be explained by purely mechanical pressure. The optic nerve and the ophthalmic artery pass through the optic foramen in a common sheath. There are cases on record where the autopsy showed a marked thickening of the artery at this place, in consequence of which the nerves were compressed and caused to atrophy. If furthermore arteriosclerosis occurs at the posterior half of the lower part of the cord, it may through the production of proliferating interstitial tissue cause a secondary degeneration of the posterior columns, and in this way produce conditions, which even in anatomical respects, resemble those of tabes. It is possible that this fact accounts for those cases which are mentioned in all statistics as a small percentage of tabes without syphilis.

Progressive muscular atrophy, amyotrophic lateral sclerosis, and multiple sclerosis, will offer much less difficulty in their differentiation from arteriosclerosis. There is on the other hand spinal syphilis which may in its clinical features resemble arteriosclerosis so closely that the differential diagnosis becomes extremely difficult. Most cases of spinal syphilis take their starting point in the meninges, and as a consequence of this produce more general manifestations and especially root symptoms. If the gray substance becomes affected primarily the symptoms may resemble those of arteriosclerosis. Here it is the clinical course which may help us to differentiate between the two conditions. Syphilis is apt to produce acute attacks with sudden remissions and exacerbations. The clinical picture is apt to undergo manifold changes and fluctuations, while arteriosclerosis is a slowly but steadily pro-

gressing disease, without many changes or irregularities in its clinical course.

Arteriosclerosis hardly ever remains confined to one single organ any great length of time. It may do so at the beginning of the disease, or the symptoms of the one or the other organ may stand out more prominently during a longer period, but sooner or later it will become manifest that arteriosclerosis is a general disease, and that its confinement to one particular part of the body is seeming rather than real. Therefore arteriosclerosis of the spinal cord does not constitute a *morbus sui generis*, but forms a period of a general disease, of which it is true the spinal symptoms may for a long time stand in the foreground, or may even form the principal features throughout the disease.

In the following cases the diagnosis of arteriosclerosis was made purely from the spinal symptoms at a time when the other organs were in a fairly good condition. During the later course the symptoms became more general in most cases, other parts of the body, especially the brain, becoming affected. As mentioned before, only those cases were selected in which syphilis could be excluded with certainty, so that this disease would not come in consideration even as an etiological factor.

Case I. Mr. G., fifty-two years old. Merchant. No heredity. No syphilis. Wife has four healthy children. No miscarriages. Use of alcohol and nicotine very moderate. No infectious disease except a few slight attacks of malaria during the last few years and scarlet fever in childhood. Patient consulted me for the first time in May, 1899. Complained about gradual loss of muscular power in his lower extremities. Since two years his gait had become more and more impaired. Besides this he complained of dizziness especially in bending down. Examination revealed perfectly normal condition of the cranial nerves. Pupillary reflexes and fundus normal. No atrophies. No change in muscular tonus. Sensation perfectly normal all over. Patellar reflexes both missing. Radial arteries very hard. Urine normal. Heart and other internal organs in good condition. Patient walks like a man of ninety years. The body is slightly bent forward, and the feet are slowly dragged, without lifting them from the floor. After walking for a few minutes in this manner he has to sit down on account of great fatigue. Standing for any length of time is equally difficult. There is a slight tremor of both upper and lower extremities. The mental condition is perfectly normal. Memory for the past as well as for recent events

excellent. Intelligence unimpaired. No morbid emotions; speech without any disturbance. Writing somewhat unsteady on account of the tremor. When asked to bend his head down and raise it suddenly he became so dizzy that he had to be supported in order to prevent him from falling. The diagnosis of arteriosclerosis of the spinal cord was made. Patient remained in this condition for about two years; then the symptoms became still more marked, so that he was hardly able to walk at all. Two months ago cerebral hemorrhage and death.

The absence of the patellar reflexes in this case combined with the impaired gait and the motor disturbances due to tremor and dizziness resembling, to a certain extent, a moderate degree of ataxia, had led to the diagnosis of tabes, which, however, I rejected

positively.

Case 2. Mr. N., sixty-four years old. Merchant. Heredity, alcohol, nicotine, syphilis and other infectious diseases negative. I saw patient for the first time in October, 1899, in consultation with his family physician, from whom I obtained the following history. He was always a healthy man up to a few years ago when he noticed a slight weakness in his lower extremities coming on very gradually. About eight months previous to the time when I saw him, he fell in the street and sustained a fracture of the left femur, complicated by a complete tearing of the tendon of the quadriceps. Patient could not remember that he had slipped in the street nor that his fall was due to dizziness or vertigo. All he knew was that his limb gave way and that he fell. He was treated surgically and made a complete recovery, so that he could walk about as well as he did before the accident. The weakness of the lower extremities continued and increased gradually, About five months later he had another accident in the street in spite of his extreme care in walking. This time he fractured the tibia of the left leg. He was absolutely sure that he had not slipped, and that no disturbance of consciousness could account for his fall. The examination revealed an absence of both patellar and both tendo-Achillis reflexes. No other symptoms on the part of the nervous system. Both radial arteries were sclerotic and the second heart sound was very much accentuated. The arteries of the lower extremities as far as they could be examined showed no particular change. The diagnosis of spinal arteriosclerosis was made, and the patient treated accordingly. Since that time he has remained in good health with the exception of the slowly progressing weakness of his lower extremities. There was never any pain in any part of the body.

Case 3. Mrs. B., forty-eight years old. Father died of apoplexy when fifty years old. One brother has heart disease; one sister highly nervous. No syphilis. Scarlet fever and diphtheria in childhood. Patient came to my office in November, 1900, with

the following complaints: Since about a year she noticed a gradually increasing weakness of the lower extremities which manifested itself mostly in the standing position. Patient in fact claims to be unable to stand still. If not sitting she must move about. She experiences great difficulty in getting up from a chair and in climbing stairs. Walking produces fatigue very easily. She complains of a dull aching pain in the back and in the lower extremities, especially after any exertion. Occasional attacks of headache and vertigo. Patient is a very stout woman, weighing 212 pounds. Objective examination reveals no symptoms on the part of the nervous system, except patellar reflex on the right side missing, on the left side very much diminished. Tremor of upper and lower extremities. No atrophies. Radial and temporal arteries highly sclerotic. The right radial artery feels like a cord of iron. On both lower extremities large areas of varicose veins. On the anterior surface of the left leg an ulcer of the size of the palm of the hand is very sluggish in healing in spite of careful treatment. Systolic murmur of the heart and accentuated second sound. No enlargement. Internal organs otherwise normal. Urine contains no albumin nor sugar. Mental condition is in perfect order. The inability to stand is due to the combination of weakness and tremor of the lower extremities with the heavy weight of the body which makes walking easier than

Case 4. M. C., forty-five years old. Tailor by occupation. Mother died from apoplexy. One brother has a spinal disease. Two sisters both nervous. No syphilis or other infectious diseases. Moderate use of alcohol and nicotine. Since several years weakness of lower extremities and pain on exertion. Nervous system shows no objective signs except absence of patellar reflexes. Sclerosis of radial and temporal arteries. Slight enlargement of the liver. No changes in the other organs. Urine normal.

Case 5. S. L., fifty-two years old. Peddler. Father died from brain disease. Three sisters and four brothers are all nervous. No syphilis or other infectious diseases. Admits considerable use of alcohol and nicotine. Patient complains about weakness and dull pain in upper and lower extremities. No shooting pains. Occasional headache and dizziness. Examination showed slight difference of pupils, the right being larger than the left one. No other symptoms on the part of the cranial nerves. Pupillary reflexes normal. Patellar reflexes exaggerated. Marked tremor of the tongue, upper and lower extremities. Sensation normal. Gross muscular power very weak. No Romberg; no atrophies. Nails are brittle. Multiple ulcerations at the tips of the fingers. One ulcer on the sole of the foot of the size of a silver dollar, looking like a typical mal perforant. Radial and temporal arteries highly sclerotic. The right radial artery can be

felt as a hard string up to the middle of the forearm. Second heart sound accentuated. Other internal organs normal. No albumin; no sugar.

In all these cases the spinal symptoms stood in the foreground of the disease, although an arteriosclerosis could be demonstrated also in other parts of the body. In several instances the complex of symptoms resembled that of tabes just as cases of cerebral arteriosclerosis may resemble general paresis.

The following group represents a set of cases in which the spinal symptoms are combined with cerebral manifestations.

Case 6. Mr. H. S., sixty-five years old. Merchant. No heredity. No alcohol. No nicotine. Syphilis could be excluded with certainty. No other infectious diseases. I saw the patient at first in November, 1898, in consultation with his family physician, from whom I obtained the following history. He was always in perfect health up to two years ago, when the sight of the right eve began to fail. An oculist, who was consulted at that time, diagnosed a beginning atrophy of the optic nerve, for which no reason whatsoever could be detected, so that it was considered a case of so-called idiopathic atrophy. This process advanced slowly but steadily, and about half a year later the same condition took place in the other eve. At the same time the patient experienced some difficulty in walking, which also increased gradually. There was never any pain in the upper or lower extremities. When I saw the patient the atrophy of the optic nerves was advanced so far that he could only distinguish between light and dark. The pupils did not react even to the strongest stimuli of light. There were no symptoms on the part of the other cranial nerves. Patellar and tendo-Achillis reflexes were absent. No Babinski phenomenon. The muscular power of both upper and lower extremities was very weak and there was a fine tremor in hands and feet. Patient could walk only a few steps, and with great difficulty. Sensation was perfectly normal. The heart sounds were somewhat dull, but there was no murmur and no abnormality on percussion. The lungs were slightly emphysematous and the internal organs otherwise normal. No albumin nor sugar. Radial and temporal arteries showed no particular change. The mental condition was perfectly normal. I diagnosed the case as one of cerebrospinal arteriosclerosis, explaining the optic atrophy by the condition mentioned before, i.e., by pressure of the enlarged and rigid ophthalmic artery on the nerve at its passage through the optic foramen. The weakness and the tremor of upper and lower extremities continued to increase gradually without being complicated by any sensory symptoms. During the following summer, while patient

was in the country, he developed suddenly very marked mental disturbances. When I saw him he was in a state of great excitement, screaming and scolding. He had delusions of persecution and hallucinations of sight and hearing. The mental condition during the following weeks offered the typical picture of a case of dysphrenia, which is mainly characterized by the changeability of symptoms and lucid intervals. At times he was wild with excitement and at other times perfectly quiet. Now he was deeply depressed and melancholy, and then again gay and jolly. Here and there he had isolated delusions and hallucinations. All these morbid conditions were interrupted now and then by lucid intervals, during which his mental condition appeared perfectly normal. This special form of psychosis was in accordance with the diagnosis of arteriosclerosis, the symptoms being those of dysphrenia arteriosclerotica.

During the following year the lower extremities grew so weak that the patient became entirely unable to stand or walk, although there were no true paralysis, atrophies, or contractures. The mental condition kept on changing according to the nature of the disease. During the summer of 1901 patient had a hemorrhage in the internal capsule of the left hemisphere with right-sided hemiplegia and aphasia, which, however, receded after a few weeks, so that the condition became about the same as it was before, except for an increased weakness of the right arm. During the winter of 1901-1902 he had several attacks of edema of the lungs, which he also survived. Recently he got an edema of the hands and feet, and is in an extremely weak condition. The urine never contained any albumin.

Here we have a case with loss of patellar and pupillar reflexes; blindness, inability to walk and mental disturbances. How closely this complex of symptoms resembles those of a case of tabes, combined with general paresis, and still how different are both conditions in their pathogenesis. If this patient were about fifteen years younger the diagnosis of general paresis might have been very tempting, and still there is no reason why this very condition should not occur in younger men. I have no doubt that a certain percentage of cases which are reported in statistics as tabes and general paresis belong in this category, and that this, as said before, may account for the tabes and paresis cases without syphilis.

Case 7. Mr. A. T., forty-four years old. Merchant. Mother died from brain disease. One other brother died from apoplexy. Two sisters both "very nervous." No alcohol. Very moderate smokers. No syphilis and no other infectious diseases. When

I saw patient in October, 1900, in consultation with his family physician, he complained of general weakness, especially in the lower extremities. While in earlier years he was a good sportsman, he was unable now to run or even walk for any length of time. Standing was especially difficult. After the least exertion he experienced extreme fatigue and dull pain in his back and extremities. This condition came on very gradually during the last few years. Of late he was also troubled with a number of mental disturbances. At times he was depressed and suffered from loss of ambition and energy. Besides this, he complained of certain morbid fears and impulses, and of imperative ideas. Whenever he boarded a train of the elevated railroad or a ferryboat he experienced the impulse to jump down, and often asked the conductor to prevent him from doing so. Since recently he did not dare to take the elevated, but preferred the surface car for this reason. For days he was annoyed by certain thoughts and ideas, which he recognized as utterly absurd, but of which he could not rid himself. There were no objective symptoms on the part of the nervous system, except very sluggishly reacting patellar reflexes and a fine tremor of upper and lower extremities. Both radial and temporal arteries were as hard as iron cords, and considerably twisted. There were extensive varicose veins on both lower extremities and the ophthalmoscopical examination revealed sclerotic arteries of the retina. The outlines of the heart were normal, and there was no murmur, but the sounds were extremely intense. The urine contained traces of albumin, and the other organs were normal. I made the diagnosis of arteriosclerosis of the central nervous system. Half a year later patient died suddenly from cerebral hemorrhage.

Case 8. A. W., fifty-two years old. Tailor. Father died from apoplexy. No alcohol. Moderate use of tobacco. No syphilis. Has seven healthy children. No other infectious diseases. Patient consulted me in September, 1900, on account of weakness of the back and lower extremities, and of dull pain in these parts after any kind of exertion. Besides this, he complained of headaches, dizziness and ringing in the ears. These symptoms had come on gradually during the last two years. Up to that time he had always enjoyed good health and strength. There were no objective symptoms on the part of the nervous system, except a fine tremor of the hands, slight unsteadiness of the lower extremities, and somewhat exaggerated knee-jerks. Radial and temporal arteries were very hard. The heart sounds were very much accentuated, but there was no murmur or enlargement. Other internal organs normal. No albumin nor sugar. There were very large extensive varicose veins on both lower extremities. Nails were brittle; skin dry and badly nourished. The diagnosis of arteriosclerosis of the central nervous system with the complex of

symptoms of Menière's disease, was made.

Patient's condition grew gradually worse; especially the spinal symptoms increased quite rapidly. After about six months patient was hardly able to walk. The patellar reflexes had become very slow and sluggish, but there was no atrophy and no pain except after exertion. After another six months patient developed mental symptoms consisting of depression and occasional maniacal outbursts. Now and then there were remissions in his psychical symptoms, lasting one or sometimes several days, so that the psychosis offered the clinical picture of a dysphrenia. Intelligence and memory remained unimpaired throughout the disease. In De-

cember, 1901, patient died from cerebral hemorrhage.

Autopsy: Edema of the brain. Pia can be removed from the brain without difficulty; extensive hemorrhage in the left internal capsule. Arteries of the brain and cord very sclerotic. Left Svlvian artery showed several white thickenings. Right Sylvian artery also considerably thickened throughout its course. Vertebral artery highly sclerotic. Brain and cord were hardened in five per cent. formalin. Sections were stained with Weigert, Nissl, Van Gieson and carmine. The anterior longitudinal artery of the cord was very much enlarged in diameter throughout its course; especially the adventitia seemed to be thickened considerably. The lumen of the vessel varied at the various levels. At some places it appeared somewhat contracted and packed with blood corpuscles, and at other places it was enlarged and irregularly shaped.. The posterior longitudinal arteries showed similar conditions, with the exception that here the lumen of the vessels seemed not to be enlarged but rather diminished in size throughout. Both anterior and posterior spinal arteries showed considerable thickening of the walls. The arterioles of the gray matter of the cord appeared to be much thicker than normal. The lumen was often extremely small and sometimes seemed to be occluded entirely. At several places there were blood corpuscles on the outside of the vessel, and small groups in the substance of the gray matter, indicating minute hemorrhages. The motor cells in the anterior horns were normal in size and shape, but here and there the Nissl bodies appeared rather indistinct, and there was a very marked increase of pigment in the bodies of the cells. The cells of the posterior horns showed no morbid changes whatsoever, and the white substance was perfectly normal throughout the entire cord. The microscopical examination of the brain showed also general arteriosclerosis. A great many of the smaller arteries and arterioles were occluded, and several capillary hemorrhages had taken place into the substance of the brain.

All the foregoing cases represent the spinal type of arterio-

sclerosis sufficiently advanced to produce such anatomical changes in that organ that the diagnosis of an organic lesion could be made without difficulty. The question is now whether we would not be able to recognize this condition at an earlier period of the disease, at a time when no gross changes in the substance of the cord have yet taken place. There can be no doubt that every case of spinal arteriosclerosis must give some symptoms at such an early period, and that some cases may become stationary and never give evidence of an organic lesion. Naturally cases of this kind are as a rule put in the large indefinite category of neurasthenia. Although I do not claim to be able to lay down certain diagnostical rules, to separate these earlier or minor cases of spinal arteriosclerosis from purely functional nervous disorders, I want to point out a certain group of cases in which the diagnosis of beginning spinal arteriosclerosis at least suggests itself, considering the clinical manifestations of the well-marked cases described above.

The following case is only a representative of a frequent and well known form of disturbance:

Case 9. Mr. F. T., forty-three years old. Merchant. Father died from apoplexy. Mother and two brothers are nervous. No alcohol nor nicotine. No syphilis nor other infectious disease. Since a number of years patient complains about general fatigue, especially of the lower extremities, after the slightest exertion. His skin is dry and badly nourished. Nails are brittle. Circulation is sluggish. Patient complains constantly of cold feet. After a cold bath it takes him a long time to restore his circulation and to become warm. He suffers from sleeplessness. In the morning he feels extremely heavy and tired, and the eyes are bloodshot. The examination reveals no objective symptoms except rigid radial arteries.

This case represents, as said before, a type of patients who are generally classified among the neurasthenics, and who are by no means rare in the practice of any physician. If we compare his symptoms with those cases of well marked spinal arteriosclerosis, we must admit that a striking resemblance exists between them, and that at least the possibility of this case belonging in the same category cannot be denied. It is evident of what importance it would be, to recognize the real pathogenic origin of this class of

cases, for not only scientific but also for practical therapeutic purposes.

So much, I think, can be said today, that a special type of arteriosclerosis exists, which has to be located in the spinal cord. It must be left to future investigations to advance our knowledge of this somewhat obscure process still more, and especially to throw more light on the origin of this morbid affection of the vascular system.

THE MICROSCOPIC FINDINGS IN FOUR GASSERIAN GANGLIA REMOVED FOR TRIGEMINAL NEURALGIA.¹

WITH A RÉSUMÉ OF TWO PREVIOUSLY EXAMINED.

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In the Annals of Surgery for June, 1901, I reported the microscopic findings of the examination of two Gasserian ganglia removed by Dr. Bartlett for persistent and very severe trigeminal neuralgia. The conclusions reached then in respect to the pathology of this disease were tentative, and it was for the purpose of testing their correctness that a study of four additional Gasserian ganglia was made. I am indebted for them to Drs. Bartlett, Mudd, and Carson, the latter for two, and I wish here to express my thanks for the specimens as well as for the clinical notes of the cases from which they were removed.

The experience in regard to methods of sectioning, staining and general technic gained in the previous study were of great use in the present series, and it can be justly said that changes which might be due to accidental causes have been avoided as much as it is possible to do so with the technical methods at present at our disposal. The value of the findings in the present series is further increased by the fact that two of the ganglia were removed before any peripheral operation had been done on the branches arising from them. In this way the traumatic effects of stretching, resection, and forcible evulsion were not present to invalidate whatever positive findings in the nerve cells were obtained. In one of them, the one numbered 5, I have been able to use a technic for hardening, the most perfect that has as yet been devised. This method was employed and modified by Orr and Rows in studying the posterior root ganglia in dementia paralytica.

In the consideration of that ganglion, I shall refer to the technic more in detail. In the first ganglion studied the Marchi stain was very successful, and it showed beyond question that the effect of operation on the peripheral branches of a Gasserian

¹Read before the St. Louis Medical Science Club, November 11, 1902.

ganglion is to be seen in the production of marked changes in the peripheral branches.

For the general considerations of the anatomy and of the literature of this subject I shall refer to the article previously alluded to. Since that was published, I am unable to find any additional data of any importance on the microscopical study of such ganglia, although they must have been removed a great many times. I shall describe in some detail the findings in each of these ganglia, numbering them 3, 5, 6, and 7; then I shall attempt to summarize them, with the view of bringing them into relation with the general pathology of trigeminal neuralgia. (The ganglion numbered 4 was omitted from this series on account of its imperfect condition.) I shall then lay before you, chiefly for your criticism, certain conclusions in regard to the pathology of trigeminal neuralgia, which the study of these six ganglia has seemed to justify.

In the paper previously referred to, certain conditions were laid down which should be always present before the findings in any given ganglion can be accepted without criticism. As I have had no reason to alter them, I shall state them again here. (1) A Gasserian ganglion, upon the peripheral branches of which surgical operations have previously been made, in the way of nerve stretching, resection, etc., is unfit for pathological study, or rather, any conclusions drawn from the findings must be for the most part invalidated for the reason that the mechanical effects of the operation may cause an ascending neuritis, which might produce changes in the ganglion itself, in the cells, or in the periganglionic tissue. (2) A Gasserian ganglion, which is removed by morcellation, or is much torn or cut, cannot be regarded as a favorable object for microscopical study. (3) No conclusion in regard to the condition of the nerve cells is justified unless they have been studied by the Nissl method or its various modifications. course the ganglion must be examined in a good state of preservation.

In regard to the general technic, I may add that three of the ganglia were imbedded in paraffin and one in celloidin. All of them were cut transversely and parallel to their largest diameter, so that every section contains the whole body of the ganglion, and the cells stained in such a section were the total number present at that level. Complete serials were made in every case, and sections from different levels were stained, and only the most perfect were saved for study and description.

Ganglion No. 3. This ganglion was removed by Dr. H. G. Mudd from a patient about fifty years old, in 1901. In 1896 the infraorbital nerve was cut and pulled out at the infraorbital foramen, after being divided inside the orbit. The inframaxillary branch was cut at the mental foramen and the nerve evulsed. Cells: The cells toward the center of the ganglion are mostly normal, filling the cell spaces with almost no retraction. They take the stain however very irregularly, those staining most deeply with the methylene blue or thionin, etc., show the greatest irregularity in form. cells, in respect to their reaction to the stain, may be divided into two divisions: first, cells which are very nearly circular in outline, filling up the cellular spaces almost completely and staining very faintly, but otherwise normal in outline, nuclear position, and arrangement of Nissl bodies; second, cells which are very irregular in outline, smaller in size than the foregoing, showing marked retraction, and staining very intensely with the methylene blue stains and others of a like nature. These cells are fewer in number than the others, and most of the abnormal cells are found among them. In general they occupy a peripheral position in the ganglion body. They correspond in every way to similar groups of cells found in the first two ganglia studied, and seem analogous to a group of cells found by Head and Campbell in their study of the posterior spinal ganglia in herpes zoster. These writers supposed that such cells had to do chiefly with the function of pain, and therefore would show the most marked changes in a condition in which pain is the most prominent symptom. In a disease, such as neuralgia, where pain is the chiefest and most often the only symptom, changes in such cells might be expected to be pres-These cells show almost every change which has come to be regarded as an evidence of the abnormal condition of a nerve cell. In most of them the changes seem to point rather to a disturbance of function than to a primary intracellular pathological process. I mean by that, that they show changes of outline and in the chromatic granules rather than in the position and character of the nucleus. In some few cells even the most profound alterations are present, such as migration or disappearance of the nucleus, total chromatolysis and cell disintegration. The pigment deposit in some of the cells is somewhat similar to that previously described in the ganglion numbered 2 in the former paper. This peculiar pigmentation is so unusual that it merits attention. Pigmentation in nerve cells is not commonly considered to be abnormal, that is, when it occupies the cell periphery, as is usually the case. The pigmentation found here is perinuclear. The nucleus

is surrounded by a ring of pigment granules, varying considerably in size. The ring of pigment seems to lie above the nucleus, but the nucleolus is left free. In this specimen every tenth cell perhaps has such a perinuclear ring of pigment. It is to be noted that this curious pigment deposit is found mostly in the group of cells belonging to the first class, that is, the cells occupying the central part of the ganglion, which stain, as a rule, faintly and show otherwise little abnormality in outline or cell structure. Some cells show the usual peripheral deposit of pigment, to which no especial importance can be attached. Some of the sections, stained by Marchi for the study of degeneration in the peripheral branches, included cells from the body of the ganglion, because the cross sections of the roots were made close to the body of the ganglion. Some of the cells so included showed this perinuclear deposit, which stained black with osmic acid. Whether this is a proof of their fatty nature or not I am unable to say, but their appearance in such preparations is sufficiently striking to deserve mention.

Peripheral branches: In the study of the peripheral branches the Marchi and Van Gieson stains were used with good effect, especially the former. Portions of the three peripheral branches and also the sensory branch were cut both in cross section and longitudinally. In the first and second branches only very slight evidence of degeneration in the Marchi sense was observed. In the third branch marked degeneration was demonstrated. This consists chiefly in the usual clumps of degenerated myelin with swelling and knobbing of the axis cylinder. If you will remember that the third branch in this case had been forcibly evulsed some years ago, and that in all probability a slowly ascending neuritis resulted, these findings will be clear. Some of the sections from the sensory root show abnormal appearances by the Marchi stain.

It is rather difficult to explain this fact, because the changes are not characteristic enough to be designated as a neuritis. I am not inclined to believe that a neuritis of the sensory root exists of sufficient intensity to show itself by any microscopical method. If this were true, the good results obtained by the removal of the Gasserian ganglion would be hard to explain. It seems to me that what we have here is not a neuritis at all, but simply a destruction of the nerve fiber caused by the pressure of the forceps, for it must be remembered that in the modern operation, the sensory root is held tightly grasped by a locking forceps, while the ganglion body is being freed from its bed and while the peripheral branches are being cut. In the reports of the microscopical study of this subject, I have found one or two instances of neuritis of the sensory root, but they have not been studied carefully enough to make this point certain. It appears that the explanation above attempted is the fairer one at present. There was no definite alteration found

in the blood vessels or in the connective tissue either surrounding

the ganglion or lying between its cells.

Here and there throughout the ganglion free blood was found. The usual number of concentric bodies, the corpora amylacea, were present. The blood was no doubt produced by the operation. Summary: Cell changes, secondary in character, neuritis in the third

branch, perinuclear pigmentation.

Ganglion No. 5. This specimen was removed by Dr. Bartlett from a woman about fifty-five years old. I think there had been no previous peripheral operation. This was a most perfect speci-The case was of great interest clinically also for the reason that the patient developed, one or two days after the operation, a crossed paralysis, characteristic of a pontine lesion. This was caused, no doubt, by a slight hemorrhage into the pons, due to the tearing out of the sensory root. The paralysis cleared up within a week. I wish to say a few words concerning the method of hardening employed in this ganglion. It is a modification of Mann's method, and has for its object the avoidance of artifacts and the prevention of cell retraction. The authors claim for this technic that it presents an absolutely natural picture of the cells and that any retraction of the cells which is found must have existed before the specimen was hardened. This method was employed chiefly in the study of the posterior root ganglion, and for this reason is especially well adapted to the Gasserian ganglion. The similarity in anatomical structure between them has been previously pointed out in a former article. The method is as follows:

Fixing Solution: Picric acid, sat. sol.; sublimate, sat. sol.; for-

maldehyde. Equal parts. Three days.

Alcohol, beginning with forty per cent.

Thin celloidin.

Origanum oil, paraffin, equal parts, 12 hours, temperature, 45 to 50 deg.

Paraffin 12 hours.

The stain chiefly used was the Held toluidin blue, with a counterstain of erythrosin. This method gave satisfactory specimens.

Cells. The same irregularity that was noted in the previous specimen and the same division of cells were present. The cells lying in the periphery showed the same alterations in point of staining qualities and the same deviations from the normal. The centrally situated cells can, for the most part, be considered to be normal, with possibly a too faint staining reaction to be regarded as absolutely so. The smaller cells showed great irregularity in outline and in internal structure; some of them were so altered that they did not appear to be sensory cells at all. It is interesting to note the sharp contrast between the peripheral cells and those cells lying in the central part of the ganglion. The latter show no cell retraction at all, carrying out the contention of the authors al-

luded to before, while the peripheral cells are often so shrunken that the spaces between the cells and their pericellular limits were often larger than the cell-bodies themselves. There was an almost complete absence of the perinuclear variety of pigmentation. Whatever abnormality there was seemed to be limited to the smaller peripheral cells, which, on the whole, showed very much the same deviation from the normal as the cells in ganglion numbered three. No alteration was found in the blood vessels or in the interstitial tissue. Peripheral branches, as well as they could be studied by the Van Gieson stain, show no evidence of degeneration. The specimen contained a large number of concentric bodies, scattered irregularly throughout.

Summary: Beyond the abnormal appearance of a group of small cells lying in the periphery of the specimen, very little abnormality can be found. This was the most perfect ganglion that I have examined, so that it can be taken as the one which best represents the appearance of the Gasserian ganglion removed for

severe trigeminal neuralgia.

Ganglion No. 6. This ganglion was removed by Dr. Carson from a patient about fifty-four years old, who had previously not been operated upon. The specimen was imbedded in paraffin and was not a very satisfactory preparation, chiefly on account of the difficulty in obtaining sections that were thin enough. The Held

stain was chiefly used.

Cells: They show more deviation from the normal than in any of the preceding specimens. The cells show the most marked alterations in outline. Here, as in the two preceding ganglia, the division into two sorts of cells seems to be justified. The cell changes consist for the most part in greatly irregular outlines with marked retraction of the cell-body. In many cells the nucleus occupies a peripheral position, and sometimes is entirely absent. Such cells as these can be said to be definitely pathological. Very few cells seem to be normal, even the centrally lying cells, found so nearly perfect in the two preceding specimens, are here changed. There is much pigmentation of the cells; the perinuclear variety being very frequent, though scarcely as marked as in ganglion No. 3. The blood vessels and interstitial tissue appear normal.

Summary: Very definite and profound cell changes throughout the whole ganglion, irrespective of the position of the cells. The changes are so marked that they must be regarded as the seat of pathological changes in spite of the imperfection of the specimen

from the microscopical point of view.

Ganglion No. 7. Removed by Dr. Carson from a patient upon whom no peripheral operation had been performed. The patient had been under treatment for a severe neuralgia for a period of ten years; during this time he had taken an immense amount of bromides and analgesics. The specimen was hardened in celloidin

and stained by Nissl, thionin, and Van Gieson, etc. The specimen was much like ganglion No. 5 in general appearance and in stain reaction. Division of cells is the same as in the previous specimen. The changes consist in great irregularity of outline. form of many of the cells is completely changed, from that of a round or oval body to an elongated or pyramidal one. The typical globular form of a sensory cell in the Gasserian ganglion is completely altered. The Nissl bodies are very irregular in their arrangement, the concentric form being seldom seen. Chromatolysis and vacuolization are seen to some extent, at least, in almost every cell. The cells themselves stain very irregularly; this causes a peculiar cell appearance, one part of the cell being deeply stained while another is almost without any stain at all, with absolutely no Nissl bodies to be made out. This peculiar intracellular stain reaction is not found in the cells of any other ganglion examined. In some of the cells lying deep in the ganglion there was a nuclear migration without any other cell change. could be seen especially in the lightly stained cells. The number of abnormal cells in this ganglion is so large that they cannot be due to accidental causes. In the specimens are to be found very few normal cells, and the appearance of the ganglion as a whole is so different from the normal that one cannot escape from the conclusion that it is definitely the seat of pathological changes. There is no pigment deposit of importance and no alteration in the blood vessels or interstitial tissue.

The findings in these four ganglia and in the two previously reported might be summarized as follows: In all of them a certain number of distinctly abnormal cells have been found. This number is too large to be accounted for by the accidental effect of faulty technic, or through hardening or straining processes. The cell changes have been found mostly in the peripheral portions of the ganglia, and in those cells which are characterized by staining deeply, by elongated outline, and by their small volume as compared to the cells which lie in the deeper portion of the ganglia. The changes found in the cells vary all the way from a slight degree of chromatolysis to profound changes of total cell disintegration and nuclear migration. In three of the six ganglia perinuclear pigmentation was present in large numbers of cells. This is so different in position and character from the pigment found in many normal cells, that it must be, for the present at least, regarded as a deviation from the normal. In one of the ganglia a sclerosis of the periganglionic tissue with excessive connective tissue formation around and between the cells was found, which was so pronounced that its pathological significance is unquestioned. In some of the ganglia neuritic changes were found in the peripheral branches, but only in those cases in which a peripheral operation had previously been done. No certain changes in the blood vessels could be demonstrated. Concentric bodies or corpora amylacea were found in all the specimens, but they have no interest beyond their chemical or histological study.

In view of these findings, then, there is this question which confronts us: Have we a sufficient basis for the establishment of a pathology of trigeminal neuralgia, that is, for a pathology based upon anatomical variations from the normal? Before discussing this question, it is well perhaps to consider something about the data upon which we have to rely for an answer. If these six ganglia do not afford any basis for the answer to this question, six more or sixty more will certainly not. All of these ganglia were from cases of the most severe form of neuralgia; in three of them there had been no peripheral operation to complicate the microscopical findings, and all of them were removed cleanly and given to me in a fresh state, well adapted for histological study. In other words, accidental sources of error were removed as far as it is possible to do so at present, and the most approved technic was used in preparing them, and as far as I know nothing was omitted in the way of staining, hardening and fixing to give accurate preparations. It seems then a fair conclusion that, if trigeminal neuralgia depends upon disease of the Gasserian ganglion, these six ganglia should show sufficient anatomic changes to explain its chief symptom. If, on the other hand, trigeminal neuralgia does not arise from disturbance of the Gasserian ganglion, then the changes here described must have some other explanation. further conclusion is forced upon us, and that is that if the Gasserian ganglion is the seat of trigeminal neuralgia and no changes in the ganglion sufficiently intense to explain the symptoms can be demonstrated, then either our methods of microscopical examination are at fault, or it is impossible to connect changes in the nerve cell with manifestations of abnormal cell activity, as is shown in this disease by the frequent attacks of the typical neuralgic pain. There is little doubt in my mind now that the principal seat of all trigeminal neuralgic symptoms is found in a diseased condition of the Gasserian ganglion. The proof of this, and I can see no way

out of it, is found in the complete disappearance of symptoms when the ganglion itself is removed, or when the sensory root is divided, as has lately been done by Frazier at Spiller's suggestion. As soon as the ganglion is isolated, that is, as soon as its sensory pathway to the brain, where, of course, the conscious manifestation of pain is situated, is blocked, at that instant neuralgia of the quintus ceases. In the face of this anatomical proof, we must conclude that the causes which produce the attacks of pain must have their anatomical origin in the cells, the tissue, or the nerve fibers which compose the structure of the ganglion. Having now localized the only possible seat of the disease, anatomically considered, we may take up the other two questions. As far as the reliance on microscopic technic is concerned, it can safely be stated that we can rely upon its results when the technic is followed out with reasonable care and when enough material of the same sort is present as to overcome the natural sources of error. Six ganglia and many hundreds of sections seem to me sufficient to overcome this difficulty.

It seems fair then to say that whatever changes in the ganglia were present were shown by the methods employed with sufficient accuracy to make use of them towards an explanation of the disease. Of course it must be recognized that the limits of microscopical technic are of themselves sufficiently narrow to prevent any but a crude attempt at the explanation of diseased function. The last question to be considered is the ever present difficulty of connecting abnormal cell conditions anatomically with abnormal cell functions physiologically. This in truth is the crux of the whole question, and it is by no means limited to the problem here under discussion.

Given a nerve cell or cells in a Gasserian ganglion from a case of trigeminal neuralgia, having presumably to do with the function of pain, how can we in our own minds connect, let us say, the migration of their nuclei with the agonizing pain present in all such cases? This very point has been recently discussed by Schenck in his monograph on the physiological basis of the neurone theory. He especially emphasizes the fact that physiological processes may go on in the nervous system without their cells taking an active part in them. If this is true physiologically it must be true in the pathological sense also. In considering the chief symptom of neuralgia,

that is, the recurrent attacks of pain, we must face the fact that our conception of the possible causes of pain are narrowed down to two, and perhaps to a single element. Briefly, we can comprehend mechanical causes for pain in the larger sense of the term, such as pressure, stretching, weight, etc., and we can somewhat as readily comprehend certain chemical causes of pain, such as for example, the effect of an acid on an exposed nerve fiber. We are able to do this because we have experienced their effects. All other causes we cannot correctly reason about because we cannot directly experiment with them on ourselves. For example, if we try to think of any intracellular cause for pain, we must deal immediately with purely metaphysical conceptions. That there exists, or rather that there can exist, a purely parenchymatous cause of pain, is altogether possible, but at present, pathology, as we know it, does not seriously concern itself with it. There is little doubt that certain cases of trigeminal neuralgia are caused by the effects of mechanical pressure on the ganglion. There have been a few cases reported where tumors or traumatic bone lesions were found sufficiently near the ganglion body itself to exercise mechanical pressure upon it. Sclerosis of the ganglion itself may also be regarded as a cause acting mechanically. The deposit of connective tissue by pressure on the nerve fibers may well produce the attacks of pain which we so well know. But these extrinsic causes, acting mechanically, must be but a small factor in the causation of neuralgia, for their presence is a matter of great rarity in the published reports on the study of Gasserian ganglia removed for neuralgia. It is well, however, to remember that this is an occasional factor.

There are two other explanations remaining. The toxic nature of the disease and the intracellular origin of it. These might well be taken together because I think they can in a measure be brought into relation with the abnormal findings present in these six ganglia. I take them together for another reason also, because they both remain an unknown quantity, and it is only through their assumed effects that we speak of them. First of all I want to emphasize the fact that the cell changes which I have described are not the causes of neuralgia in the sense of a primary cell disease, but are either the effects of an abnormal or a greatly exaggerated cell activity. Whether these cells are primarily concerned in the

production of pain is of course an undecided question, but it seems very probable that they are. These abnormal appearances in the six ganglia examined mean that the cells so affected have been over active for a long period of time, or that they have been abnormally active, so that gradually they have lost their anatomical integrity. They may be in a measure compared to the nerve cells in a state of intense fatigue, which Hodge has pictured in his experiments made at Clark University some time ago. In so far then we have the right to regard these ganglia as pathological, and every ganglion removed for the severe grade of neuralgia, for which alone the operation is justifiable, ought to show, if carefully examined, such large numbers of cells abnormal in this sense, that some account of them must be made.

As to the active causes leading to such pathological activity, we are mostly in the dark and any attempt at explanation must be purely speculative. There are two reasonable explanations: first, that there is some toxin circulating in the blood, which has a selective action on the cells of the Gasserian ganglion, usually on one side, and especially on a certain group of cells which may have to do with the function of pain. The nature of this toxin is absolutely unknown. Second, the cells themselves originate the toxin owing to some abnormal cell activity. That cells have this ability is proven by the recent studies on immunity. Possibly both of these factors are at work along with others of which we know as little. The results, after all, of this ganglion work in neuralgia, which at first sight are not very encouraging, are really of some importance, and I think that the line of inquiry which the study opens for us is well worth pursuing.

The following conclusions seem to be justified:

- I. In six ganglia removed for trigeminal neuralgia, anatomic changes were found of sufficient importance to bring them in relation with the symptoms of this disease.
- 2. These changes in the cells do not point to them as the primary cause of neuralgia, but they may be taken to represent the effects of abnormal cell activity, the origin of which we are not able to point out.
- 3. The Gasserian ganglion is the anatomical seat of the chief symptom of trigeminal neuralgia, that is the attacks of neuralgic pain.

Society Proceedings

NEW YORK NEUROLOGICAL SOCIETY.

November 4, 1902.

The President, Dr. Joseph Collins, in the chair.

Successful Laminectomy for Spinal Cord Tumor.—Dr. Pearce Bailey presented a man who had been referred to in a communication to this Society made by Dr. McCosh. The operation had been done by Dr. McCosh in May, 1900. In December, 1898, when the patient was thirty-nine years of age, the illness began with sharp, shooting and intermittent pain in the leg. It extended from the sacral region down the posterior surface of the limb to the knee. He did not work from November, 1899, until he came under observation in May, 1900. At that time he was suffering intensely and could only walk with difficulty even with the aid of a cane. The pain affected the left lumbar region, the back and the front of the thigh, although previously it had been confined to the sciatic distribution. Examination showed an atrophy of the left leg with weakness and diminution of the knee-jerk on that side. There was very slight anesthesia over the area corresponding to the lower lumbar distribution, and also on the front of the thigh. There was some difficulty in passing urine. The anesthesia was considered very suggestive of tumor, involving as it did the anterior surface of the thigh. Laminectomy, involving the eleventh dorsal and down to the second lumbar vertebra, was done, and disclosed a bluish tumor which was removed. The result of the microscopical examination left it uncertain whether the tumor was a small-cell sarcoma or a mass of fibrous or granulation tissue, but the subsequent history pointed to the latter diagnosis as being correct. The man was able to continue at his usual occupation, which involved a good deal of muscular exertion, and experienced no trouble from the back, despite the laminectomy. Both knee-jerks were present now, and the anesthesia had disappeared from the front of the thigh.

Osteosarcoma of the Spinal Column; Treatment with Coley's Fluid.—

Dr. Joseph Fraenkel presented a young man who had been well up to three years and a half ago, when he was struck in the back. For the next six months he was able to continue at work, but then the pain in the back became severe. When seen by Dr. Abrahamson a diagnosis of Potts' disease was made, and this was confirmed by Dr. Gibney, and the patient was put in a plaster of Paris jacket. About a year later there was total paraplegia. He was then admitted to the Montefiore Home. There was absolute motor paralysis of both lower extremities with absence of the tendon reflexes. There was an area of anesthesia about the size of a dollar in the anal region. There was no tenderness, and no external evidence of disease of the spinal column. Three or four months later a projection developed, which was most marked at the tenth dorsal vertebra. Exploratory puncture revealed no pus. Two weeks later a large swelling appeared on either side of the vertebral column. An exploratory operation showed the tumor to be solid, and a portion was excised for examination. Dr. Harlow Brooks reported the growth to be a highly vascular sarcoma. Injections of Coley's fluid were begun on February 13, 1902, though some improvement had been noted before this time. The treatment was continued up to May 15. At times the reactions were quite violent. After stopping the treatment the patient's general condition improved markedly, and the tumor diminished in size and became harder.

A Case for Diagnosis.—Dr. W. B. Noyes presented a man of twenty-

six who fell three days previously from a building while at work. When seen the day before the meeting of the Society, he was walking on his tiptoes with the aid of crutches. Examination showed no sensory changes and no disturbance of bladder or rectum, and vision was normal. The reflexes were all increased. The case was presented for diagnosis. He looked upon it as one of hysteria, although he had thought of a slight hemorrhage in the upper part of the pons.

the upper part of the pons.

Dr. M. G. Schlapp said that the case suggested concussion of the spinal cord, because of the spastic condition of the muscles that had been

observed experimentally after injury to the cord.

Subcortical Tumor; Operation.—Dr. M. G. Schlapp presented a man who had been successfully operated upon for brain tumor. He had come to the clinic at the Presbyterian Hospital in the middle of July with the fingers paralyzed in a claw position. There was paresis of the face; anklecionus and increased knee-jerk were present; there was no disturbance of the tactile sense. The condition began three years ago with a sudden convulsion lasting about half an hour. After about one week the patient developed Jacksonian epilepsy, and the attacks recurred about every three months. There was no history of congenital syphilis. The only history of injury was of being struck on the head by a barrel ten years before. A diagnosis of subcortical tumor was made. Dr. George Woolsey found on operation a cyst, about three inches in diameter, within which and adherent to its wall was a tumor. The latter was peeled out easily, and on examination, proved to be a fibroma. The patient's condition had improved considerably since that time.

had improved considerably since that time.

Dr. B. Sachs said he had reported some years ago a case of large tumor developing from the wall of a cyst, an occurrence which he did not think was very common. It was probable that the tumor had developed

in the wall of an old congenital cyst.

A Tumor Formation in the Region of the Coccyx.—Dr. I. Abrahamson presented a child of one month with a tumor in the region of the coccyx, which had been noticed immediately after birth. There was no wasting and the reflexes of the lower extremities were normal. The tumor was situated at the extreme end of the coccyx, and the skin was freely movable over the tumor. There was no cleft in the vertebral column and no pulsation. The tumor appeared, on rectal palpation, to lie between the rectum and coccyx. Only on violent crying did the tension of the tumor vary. It was certainly not a spina bifida.

Dr. Robert Abbé said that it appeared to belong to the presacral tumors—really fetal remains innocent in nature, though sometimes reaching a great size. They were easily removed, but some of these tumors had been known to shrink and almost disappear spontaneously.

A Specimen of Meningocele.—Dr. M. G. Schlapp presented the brain

A Specimen of Meningocele.—Dr. M. G. Schlapp presented the brain of a child who lived three days, and died from some unknown cause. The brain showed a meningocele with almost complete hypoplasia of the

cerebellum. There was almost complete absence of the pons.

Discussion on Spinal Cord Tumors.—Dr. Joseph Collins opened the discussion with a paper dealing with the symptomatology and operability of these tumors. He had collected 70 cases as a basis for his statements. These tumors, he said, were far more susceptible of surgical treatment than tumors of the brain; nevertheless the majority of spinal tumors proved fatal. There were four reasons for this, viz.: (1) The inability to diagnosticate and localize these tumors; (2) the nature and extent of these growths; (3) the great danger to life of the operations for their removal, and (4) the inability of securing the patient's consent to operation at a period when such treatment might prove successful. It must be admitted that the clinical picture presented by such cases was not that given in our books as indicative of spinal cord tumors. A fibroma would give rise

to symptoms of as great severity as would a most extensive sarcoma. It was much more important to diagnosticate a tumor in the lower part of the dorsal region than to localize it at a single level—in other words, it was much more important to diagnose a tumor of the spinal cord than the structure from which it springs. If the location of the tumor were determined within from four to six inches he thought it would be near enough for the purposes of the surgeon. The common location of these tumors was in the upper and lower ends of the dorsal region. In the 70 cases that he had gathered from the literature, 35 were from the dorsal region, 15 from the cervical, 13 from the lumbar and sacral, and 7 were of widespread distribution—in other words, in 50 per cent. of the cases the tumor was in the dorsal region. In many cases reported the pain was by no means characteristic, and in some cases it was not even a prominent symptom, as had been formerly supposed. From his personal experience and a review of

the literature, priapism was an uncommon symptom.

The speaker then reported a case occurring in a man, first seen in September, 1901. Four months previously he had begun to complain of pain in the abdomen, apparently due to flatulent dyspepsia, and relieved when digestion was improved and the bowels regulated. About this time stiffness of the right leg began. Examination showed a Brown-Séquard paralysis on the left-side extending above Poupart's ligament. A diagnosis of spinal cord tumor was made, and an operation urged, but not agreed to until about nine months later. The man was then in a pitiable condition, and was taken into the hospital. The tumor was located by Dr. Abrahamson at the tenth dorsal vertebra, and at the operation, done by Dr. Samuel Lloyd, the growth was found at this point. The patient recovered from the operation, and had since then steadily improved, although the long delay in operating precluded the possibility of a cure. The second case was that of a young girl who became ill with what was supposed to be pneumonia in December, 1898. She remained in the hospital over three months, and the following summer the diagnosis of Pott's disease was made at another hospital. The following autumn, on admission to the City Hospital, she was completely paraplegic, and had enormous bedsores. Subsequently she died in the Montefiore Home, and the autopsy revealed a sarcoma at the level of the seventh dorsal segment. In the 70 cases collected surgical operation had been undertaken in 30, with a successful result in 12, partial success in 8, and unsuccessful in 10 cases. Of the 10 unsuccessful cases death occurred in 4 cases from sepsis and septic meningitis, while in 4 others there were collapse, exhaustion, shock and hemorrhage. In 21 cases the nature of the tumor was stated. Of these 21, 4 were fibromata, 12 were sarcomata, 3 were endotheliomata, and 1 was a myo-lipoma. According to the records 44 of the 70 cases might have been operated upon. Fourteen cases gave autopsy records which indicated that they could not have been operable.

Report of a Case of Spinal Cord Tumor Operated Upon.—Dr. Joseph Fraenkel reported this case. The patient was a woman of forty years. Three years and a half before coming under his observation she began to have slight pain in the right hypogastric region, and some time later in the buttock on the same side. Still later a painful area developed in the perineum. After all sorts of treatment she came under his care. At that time the right lower extremity was flexed, and on attempting to put her on her back the movement increased the pain in the areas referred to. There was retention of urine and obstinate constipation. The right kneejerk was absent, while the left jerk was normal. Both plantar reflexes were absent. There was a curious trophic edema of the right buttock. The diagnosis of spinal cord tumor was made, situated in the cauda equina. The first nerve implicated must have been the iliohypogastric, explaining the first area of pain. The patient was operated upon last April in the

New York Hospital by Dr. Frank Hartley, and she reacted with difficulty. A tumor was found between the strands of the right half of the cauda. It was a reddish, pultaceous mass, which proved on microscopical examination to be a fibrosarcoma. Certain symptoms improved after the operation,

but the patient died about two months later.

Report of a Case of Spinal Cord Tumor Operated Upon.—Dr. I. Abrahamson reported this case. The patient was a man of sixty in whom the first symptoms had developed in February, 1900. The first symptom was a coldness and numbness in the fourth and fifth toes of the left foot at night. Later, the right foot and leg were similarly affected. On March 15, 1902, he first came under the speaker's observation. On admission to the Montefiore Home, May 12, 1902, there were weakness and atrophy, most marked on the right side. The extremities were flaccid, with some tendency to contracture and a reaction of degeneration. The thighs were flexed, adducted and inwardly rotated. The knee-jerks were lively. There was total loss of voluntary power in both lower extremities. There was a diversity of opinion as to whether the tumor was extramedullary or intramedullary. His own diagnosis was a tumor of the spinal cord at the level of about the sixth dorsal vertebra, and this was confirmed at the operation. Unfortunately, secondary infection occurred, and the patient died as a re-

sult of this three weeks after the operation.

Dr. M. Allen Starr said that in his paper, read before this Society in 1895, he had collected from autopsy records 123 cases of spinal cord tumor. Out of this number there were 100 with sufficiently accurate records to allow of the statement that in 75 per cent. of the cases surgical interference should prove successful. Since that time Bruns had published an excellent article, and Schlesinger still more recently had published a paper containing 400 cases of spinal cord tumor. Of this large number there were apparently about 60 per cent. which were operable. Schlesinger's statistics showed that over one-fourth of these tumors were sarcomata, whereas in his own paper most of the tumors seemed to be sarcomata or fibroma-Of Schlesinger's cases 64 were tuberculous, 44 were cysts, 33 were fibromata, 28 were gummata, and 20 were gliomata. The speaker said he had seen 101 brain tumors and 10 spinal cord tumors. Of his 10 cases of spinal cord tumor only 6 had been operated upon. Two of the remainder were gummata with distinct Brown-Séquard symptoms, and sub-The other two had not been sided gradually under antispecific treatment. operated upon because the diagnosis had not been made early enough and with sufficient accuracy, and the autopsies showed in both that the operation would have been unsuccessful. Of the 6 patients operated upon, all died; 2 of meningitis, 2 of bedsores and 2 of collapse. Dr. Pearce Bailey was, therefore, to be congratulated on the great success attained in the case he had presented to the Society this evening. He would insist upon the absolute necessity of early diagnosis and early operation, a statement which had been fully borne out by the published experience of Dr. McCosh. Although Dr. Collins had called attention to the unreliability of pain as a symptom, it should be noted that in 5 out of the 6 cases reported here this evening, pain had been a rather prominent feature. Moreover in Schlesinger's cases pain was a prominent symptom. He did not see just how the differential diagnosis from meningomyelitis could be made unless pain were present. Schlesinger had also called attention to priapism as one of the common symptoms indicative of spinal cord irritation.

Dr. B. Sachs said that a number of years ago he had expressed himself as being in favor of early interference in these cases of spinal cord tumors, and his further experience had only strengthened this opinion. Reference was made to two of his cases, one operated upon two years, and the other three years ago, both of which were doing well. He would,

therefore, insist that operative interference should be urged just as soon as the diagnosis had been made. He agreed with Dr. Collins that too much prominence had been given to the question of localization of spinal cord tumors. An important and significant fact in the history of these cases was that the affection remained unilateral for a very considerable time, and when it became bilateral the symptoms of affection of both sides quickly became apparent. In those cases in which the symptoms were either sensory or motor root symptoms, and in which all of the severer spinal cord symptoms remain in abeyance for a long time, it was probable that the neoplasm was extradural. A rather sudden development of general myelitic symptoms following upon symptoms which had been unilateral for a considerable time, pointed very strongly to spinal cord tumor.

Dr. Walton of Boston said that Dr. Collins' statistics and the discussion emphasized the large proportion of operable spinal tumors and the large percentage of benefit from operation upon such tumors. Such considerations should prevent us from erring on the conservative side when the diagnosis of tumor had been established. It was to be hoped that when we formed the habit of including this possibility in every case of eliminative diagnosis tumors would be more frequently recognized at an early stage, when operation promised the most. That this habit was not established fifteen years ago was illustrated by a case at that time under his care, which was seen by so distinguished authorities as Charcot and Seguin, neither of whom suggested the possibility of tumor, both regarding the case as one of myelitis, and recommending such treatment as the cautery, ergot and strychnine. In 1892 Dr. Putnam, under whose care the patient had come, recognized the lesion as a tumor, and the case had been twice operated upon, once by Dr. Keene and once by Dr. Warren, with beneficial results though not cure. That pain was by no means an essential symptom even when the posterior nerve roots had become involved in new growth, was illustrated by this specimen of intradural carcinoma, which had completely destroyed the posterior nerve roots of one side in the cervical region. The case would shortly be published by Drs. Taylor and Waterman. There was no history of pain during the onset of this lesion. The clinical history closely resembled that of the case reported tonight by Dr. Abrahamson, i.e., atrophic paralysis of the upper, with spastic condition of the lower extremity. Dr. Collins had alluded to the fact that fibromata might cause more pain than tumors of this class, a fact illustrated by the case Dr. Putnam had reported, in which Dr. Warren removed a fibroma lying free within the dura, a longitudinal section of which, from the laboratory of Dr. Taylor, was shown. In this case violent pain, specially including abdominal pain, was the prominent feature. In the microscopical specimens exhibited was included a cysticercus in the substance of the cervical spinal cord in a case of tabes. He had happened upon this while working with Strümpell in 1880. There were no symptoms referable to the cysticercus. If neurologists gave more attention to the possibility of the presence of spinal cord tumors the diagnosis would more often be made at an early stage. He would agree with Dr. Collins that pain was, to say the least, not an essential symptom. In this connection he presented specimens from two cases. One was a case of syringo-myelia with pressure on the posterior roots, in which there was no history of pain. The other case was a carcinoma pressing upon and destroying the roots on one side, and also without pain. Dr. Walton also showed a longitudinal section of a fibroma that had been removed by Dr. Warren with great ease. In this last case the pain was excruciating.

Dr. Robert Abbé said that he had seen that very day the patient reported to the Society last year, and upon which he had reported three years ago. The patient was steadily progressing, and there was nothing to indicate any active disease. The tumor was a large one, and at the time of

operation involved the cord, so that it was necessary to curette some of the cord away. There had been no increase in any of the cord symptoms. The arms, which were formerly paralyzed, could now be raised to the head. In sarcomata of the spinal cord he thought the growth was slow as compared with sarcomata in other parts of the body. Sometimes a tumor of the spinal cord might grow for a long time, and yet give rise quite suddenly to symptoms. All of his cases of spinal cord tumors had been among The pain that he had seen in these patients had been distinctly of males. a rheumatic rather than of a neuralgic type. He did not quite understand why so many of the reported cases had proved fatal from infection or from shock, because it seemed to him that the operation should be conducted rapidly and with considerable safety. The hemorrhage in these cases was apt to be almost wholly venous, and practically it could be only controlled by pressure. A little strip of gauze pressed into the hollows as the laminæ were opened up would control the hemorrhage, and would generally prevent any great degree of shock. The dura should be opened at once if the tumor were not encountered, and should be split up for any distance necessary, and subsequently sutured with fine catgut. The escape of fluid did not seem to him of special importance; the leakage had always been slight, and had lasted only eight or ten days. The infection of these wounds in the past he thought had been largely due to the use of impure catgut.

Dr. Collins explained that he had not meant to say that pain was not an important diagnostic symptom, but he wished to call attention to the fact that the pain was not by any means characteristic as would appear

from the descriptions given in the books.

CHICAGO NEUROLOGICAL SOCIETY

October 23, 1902.

The President, Dr. Daniel R. Brower, in the chair.

Myasthenia Gravis.—Dr. Harold N. Moyer presented a patient, twenty-three years of age, whose early history was negative, except an undetermined infection of exanthematous type. The patient spoke of having had two attacks of measles about three years ago, but was not very ill. The attacks were near the time when his first trouble with the eyes developed. At that time glasses were fitted for diplopia. Dr. Pusey fitted the patient

with his first glasses, and he would report the ocular findings.

Dr. Pusey said the patient was first seen by him November 6, 1899, and at that time he complained of double vision. His vision in the left eye was 6-9; in the right eye 6-6; with minus one sphere with half a cylinder was 6-9; in the right eye 6-6; with filmus one sphere with fair a cylinder his vision was 6-5 in the left eye, and 6-5 in the right eye. At that time he had esophoria of 22 degrees, with right hyperphoria. The esophoria later became exophoria. On the 8th of December, one month later, he worked all day until midnight, with no blurring of vision, no diplopia at the time. His esophoria had disappeared, but he had slight hyperphoria. On Jan. 4, 1900, he had esophoria of one degree, some hyperphoria. July 3d, 1900, Dr. Pusey saw him again, when he complained of double vision. He had exophoria of eleven degrees, with positive divergence of the eyes. August 6th he was refracted again carefully with a mydriatic. The refraction had changed 3-4 D., he having become more myopic with 1-2 D. cylinder at different axes. He then had an exophoria of eleven degrees. He disappeared on the 6th of July, 1902, and was not seen again until the 26th of September, when he complained of double vision all the time, and inability to converge the eyes. Dr. Pusey noticed paralysis of the internal recti There was no limitation of motion in any direction except the paralysis of convergence, also paralysis of motion on either side on the part of the internal recti muscles. Six weeks ago, there was limitation of motion of the muscles in every direction except in one of the external recti.

Dr. Moyer saw the patient September 8th, at which time there was a marked general weakness, and he complained of stiffness of the lower extremities, feeling as though his knees were bound, as he expressed it. He had some pain for a time, but this gradually disappeared, and was never very intense. On two or three occasions, since September 8th, he has had marked ptosis, more in the left eye than in the right. It would last for two or three hours at a time, or for a couple of days. It has never been in both eyes at the same time. Until the middle of September, there has been progressive loss of strength, which has continued to the present time. There has been no marked increase in weakness in the last two or three weeks. The eye-grounds are normal. Aside from the extreme muscular weakness, there are no objective signs. There is no swaying with the eyes closed. The knee-jerks are not marked, but they are elicited readily. The superficial jerks are all present. The pupils react to light. At the present time there are no disturbances in pain sense; his sense of feeling is normal. It is simply a pure muscular weakness without appreciable muscular atrophy. There is no disturbance in his general health. His digestion is normal; his bowel movements are normal; his appetite is good; he sleeps well, but the muscular weakness is very pronounced. He has numbness in the index finger; the right hand is a little stronger than the left.

The facial muscles are weak. A difficulty of which he complains is a weakness of his jaw muscles; when he eats, his muscles get tired.

Dr. Goodkind asked whether there was any disturbance of speech, to which Dr. Moyer replied that the voice seemed peculiar, but the patient

said it was unchanged.

Cerebral Syphilis, Dementia with Nuclear Degeneration of some Cranial Nerves and Atrophy of One-half of the Tongue.—Dr. Moyer presented a patient, thirty-seven years of age. Four years ago, August, 1898, he went to Dr. Ingals for paralysis of the vocal cords. At that time he was very hoarse. He learned from Dr. Ingals that there was complete paralysis of one vocal cord, while the other moved. He was given strychnine and local treatment, shortly after which the paralysis disappeared. A year later the paralysis returned. This was two years ago. He was well until the summer of 1901, at which time he did not feel as well as he had previously. There was nothing peculiar in his condition until the autumn of that year, and that time he had what his wife described as "a spell." Sitting at the table he tipped over some glasses, staggered, and could not find his way about. At this time he was working very hard at his occupation of machinist. He improved until November, after which he became very tired and wanted to lie down most of the time. He slept a great deal. He ceased working last November. About that time he began to see double, the diplopia being vertical. In February of this year his right eye turned outwards. At this time the diplopia was lateral. He then developed pain over the right eye, which later shifted to the top of his head. He consulted an advertising eye specialist who "pulled" the eye straight and treated him for one month. Pain then shifted to the back of the head. He resumed his work again during the Spring, but did not remain at it very long. He could not work effectively; he could not keep his mind on what he was doing, and he made mistakes, and finally had to stop work. In June he went to the country, when his throat became worse again. He had some paralysis of the vocal cord, with hoarseness, which disappeared. A few weeks ago his mind began to wander, and it was noted that his memory was impaired. He had difficulty in swallowing, and at night has been wetting the bed. At the time Dr. Moyer first saw him he had a typical Argyll-Robertson pupil on the right side. The light reaction was present in the left eye, but was sluggish. Accommodation reaction was normal in both eyes. There was complete paralysis of the right external rectus. The eye-grounds were normal. The movements of the tongue were defective and tremulous. There is a history, although it is somewhat indefinite, of specific infection dating back to ten or eleven years. Some of the symptoms have disappeared under specific treatment. He has well-marked atrophy of the left side of his tongue. Under liberal doses of the iodides great improvement in the symptoms followed, particularly of the eyes. His memory is better; also his speech.

Dr. Brower asked as to the condition of the reflexes, to which Dr. Moyer replied that they were exaggerated, more so now than when he

saw him last.

Dr. Brower asked whether there were any distinct ankle-clonus, to

which Dr. Moyer replied there was not.

There were two features of striking interest in this case, the nuclear degeneration, and dementia. The patient has had no emotional exaltation or mental depression. His mind has been weak and feeble; he could not remember where he put things; he could not go to a neighboring store on an errand without forgetting it before he got there. The association of nuclear degeneration with dementia Dr. Moyer had not seen before. The atrophy of the tongue was organic. The reason he presented this case in connection with the other was because of the somewhat striking similarity in the ocular conditions of the two patients, yet their etiology and pathol-

ogy were very different. There is little doubt as to the specific history in this case, according to the statements of the physician who treated the patient. Dr. Moyer thought the diagnosis to some extent had been cleared up by the marked improvement, both in the physical symptoms and mental state, under specific treatment. At first, when he saw the patient, and noticed the atrophy of the tongue, and paresis of the eye muscles, he thought he had to deal with a case of myasthenia gravis.

Dr. Patrick said he had treated only two cases of myasthenia gravis, and in them strychnine had accomplished more than anything else. He did not think either of his cases was typical. The patient was given one-sixteenth of a grain of strychnine, three times a day, for a year and a

half, but had almost ceased taking it now.

Dr. Moyer asked Dr. Patrick whether he regarded his (Moyer's) case as a typical one of myasthenia gravis, to which Dr. Patrick replied in the affirmative and said he thought it would be well for Dr. Moyer to con-

tinue to give strychnine month after month.

Tabes, General Paralysis and Charcot's Joint .- Dr. S. J. Walker presented a man who came to the Policlinic Oct. 13th. He was forty-four years of age, married fourteen years, and has three living children. first child his wife had was born dead at term. The other three are living and well, aged respectively eleven, twelve and thirteen. The mother has never had a miscarriage. The patient's occupation was that of a buyer of dry goods. He gives a clear history of specific infection a little over fifteen years ago. Otherwise he gives no history of any serious illness. He complained of no trouble until ten years ago, when he said he had rheumatism in the legs. Upon close questioning him, these pains proved to be of a lancinating character. These pains have continued since, off and on. Seven years ago he had an ulcer at the base of his right big toe, which proved very intractable to treatment, and consequently this toe was amputated. Three years ago he began to notice that he could not walk so well in the dark. For the last three or four years he has had difficulty in urinating, a relative incontinence. He has had no ocular symptoms of any kind, not even transitory diplopia; no ptosis. This was his condition until about seven months ago, when he fell and sprained his right ankle. At this time there was a great deal of pain in the ankle, with swelling. The swelling extended as high as the knee. The pain continued off and on for five or six weeks, and then gradually subsided. Since then he has had no pain whatever in the joint, but the swelling of the ankle joint is still present and in degree about what it was a few weeks after the injury. An X-ray picture was taken by Dr. Hazelton, at the Policlinic, but the man shook so much that it was impossible to obtain a good skiagraph, and the negative was valueless. The enlargement of the foot was not due to bony formation, in the opinion of Dr. Hazelton. He thought it was a cartilaginous enlargement. The patient had been working at his trade up to the time of the injury, and six or seven weeks after the injury, when he returned to work, he noticed impairment of his memory. He had considerable figuring to do on articles of apparel, and was discharged at the end of five or six weeks because of the mistakes he made in his work. Upon examination the Argyll-Robertson pupil was found. He has no knee-jerks. He has analgesia of the legs, and patches of anesthesia upon the trunk. slight analgesia extending over the patch of anesthesia on the right side be-He has the characteristic stumbling speech, and has shown considerable dementia. In short the mental condition is plainly that of general paresis. The patient was exhibited on account of the rather unusual combination of diseases and the Charcot's joint. The diagnosis was made of tabes with perforating ulcer of the foot and Charcot's joint of the right ankle, and finally general paresis supervening on the tabetic affection. Lead Palsy.—Dr. Walker also presented a man who came to the clinic

on October 13th. He is thirty-three years of age, and works in a planing mill. He has five children, all of whom are well and healthy. His wife has never had a miscarriage. The family history is fairly good. The patient has never been exposed to metallic poisoning, so far as he knows, nor to arsenic, nor has he been subjected to any drug intoxication. Three years ago he was at the Alexian Brothers' Hospital for three weeks, and was thought to have consumption. A careful examination at the present time does not reveal any lesion in the lungs. He has never had any infectious disease, and has never been seriously sick. He considered himself perfectly well until about fifteen weeks ago, when he noticed swelling in his wrists and in his ankles, with some pain. The pain passed out of the ankles almost immediately, and after two days in bed he was able to walk around. About the second day he noticed weakness in his wrists and hands, and at the end of three or four days he suddenly lost power in his wrists. In other words, he had double wrist-drop. Since then his condition has been about the same; no paresthesia; no subjective symptoms of any kind except wrist-drop. Upon examination Dr. Walker found that he had double wrist-drop with the supinator involved on the right, but not on the left side, and paralysis of the extensors more marked upon the right Patient is right handed. There is partial reaction of than the left side. degeneration in all the extensor muscles, and supinator on the right side, this being more marked on that side than on the left. There is no objective sensory disturbance. His knee-jerks are equal and normal. The one pupil responds to light and to accommodation (the other eye is artificial). He looks cachectic, and an examination of the blood shows 75 per cent. hemoglobin, reds 3,568,600, whites 2,100.

Dr. Walker spoke of one thing which may be a very valuable indicator in cases of lead poisoning, and that is the presence in the red cells in nearly every case of lead poisoning, if the case is at all severe, of little granulations. These are found in every field in any severe case of lead poisoning. From a medico-legal standpoint, Grawitz, of Berlin, who does much work on blood, regards these small granulations of great value, because when once present they do not disappear until the lead is out of the system. Dr. Walker examined this patient's blood for these granulations in the red cells, and was unable to find them. He examined five or six specimens, each one of which was negative. This man is not addicted to excessive use of either alcohol or to-bacco. At most, he drinks four or five glasses of beer daily, and usually not that much. He was closely questioned as to exposure to metallic poisoning, and Dr. Walker had not been able to elicit any cause for the neuritis. It corresponded in distribution to lead palsy, except that the supinator on the right side was involved. The patient has a questionable lead line. The condition of the gums is so bad, almost scorbutic, that it is difficult to say positively that there is a lead line. He has never had lead colic, although

that is usually the rule preceding lead palsy.

Dr. Brower said that some people were sensitive to lead poisoning at certain times. He mentioned how it was possible for one to have lead poisoning in Chicago. In this city, in certain parts, the water pressure at certain hours of the day was so low that the water did not reach the upper parts of houses; the pipes are empty of water for hours at a time, then the water is turned on, the pipes are coated with the oxide of lead, which is washed off, and people were poisoned with lead in this way. He asked about the water supply of the factory in which the patient worked, to which Dr. Patrick replied that the man does not come in contact with paint, bisulphide of carbon, or gas.

Dr. Moyer suggested the possibility of poisoning by food.

Dr. Patrick said the patient has never had lead colic, and lead palsy, without preceding lead colic, in cases of chronic poisoning, is unusual.

Asked in regard to the treatment, Dr. Walker stated that it consists of hot baths, the use of iodide of potassium, and massage.

Dr. Brower said a middle-aged man, who had wrist-drop, came under his observation a few years ago. He could not ascertain the source of the lead poisoning until the patient had been under treatment for some time, then he found that he was having his hair dyed.

Dr. Goodkind asked whether the patient had any optic atrophy.

Dr. Walker replied that he had not.

Deriscope.

NEUROLOGISCHES CENTRALBLATT

(Vol. 21, 1902, No. 17. September 1.)

I. Early Symptoms of Tabes and the Achilles Reflex. S. GOLDFLAM.

Syphilitic Épilepsy. J. A. Feinberg.
 Dietetic Treatment of Epilepsy. H. Schnitzer.

4. Subcortical Origin of Isolated Muscle Cramps. J. Sorgo.

1. Tabes and Achilles Reflex.—The value of the loss of the Achilles reflex as symptom of initial tabes is confirmed by the investigation here set forth. The earliest symptom of tabes and the most constant, is the

presence of the lightning-like pains.

2. Syphilitic Epilepsy.—A report of six cases of epilepsy, classified as epilepsia luetica. These cases are divided into two general types: those without other cerebral phenomena, and those in which neural manifestations either precede or follow the epileptic attack. Two cases of the first type are given without autopsy. Three of the cases of the second type presented the Jacksonian type of epilepsy. Another case of the second type developing after a trauma, at autopsy there was found an abscess of the left frontal area.

3. Dietetic Treatment of Epilepsy.—A study of the effect of Balint's modification of the treatment of epilepsy by withholding salt suggested by Toulouse and Richet is carefully made. The administration of the bromides in the bread as a substitute for salt and the other salt-free diet is strictly adhered to. The results, while positive, were not so favorable as those reported by Balint. In two cases the patients were entirely free during the experiment, in ten cases a very marked, in two cases a not so decided improvement, and in two cases no improvement at all. The bread, at first very acceptable, was later refused by the patients. The author suggests that in chronic epilepsies, a six to eight weeks' course of treatment from time to time might be carried out with hopeful re-

(Vol. 21, 1902, No. 18. September 16.)

A New Nucleus in the Formatio Reticularis of the Upper Quadrigemina. W. v. Bechterew.
 The Lumbo-Femoral Reflex. W. v. Bechterew.
 Myotonic Pupillary Movements. A. Saenger.

Infraspinatus Reflex; A Heretofore Undescribed Reflex. Steiner.

5. Further on the Supra-orbital Reflex. D. J. McCarthy. 6. Anxiety in Hysteria and Neurasthenia. Aug. Diehl.

1. A Distinct Nucleus in the Formatio.—A distinct grouping of ganglion cells in the upper parietal region immediately behind the posterior quadrigeminal bodies, is given the name of neucleus centralis superior to distinguish it from the other cell groups in the same region.

2. Lumbo-Femoral Reflex.—In patients with pathological lesions of the dorsal cord associated with heightened reflex activity in the lower extremities, a tap of the percussion hammer over the upper sacral or lower lumbar region with the patient in a half-flexed attitude, results in a simultaneous reflex activity of the thigh muscles and also the erector spinæ. Abduction of the thigh alsooccurs in some cases.

3. Myotonic Pupillary Movements.—Saenger reports a woman of thirty-five years suffering from headaches, and who exhibited a marked dilatation of the pupil. After contraction of the pupil by accommodation, convergence or by energetic contraction of the orbicularis palpebrarum, it took as long as ten minutes before the pupil regained its usual dilated condition. Contraction of the pupil was likewise slow. He regards the condition as of local character, i.e., in the iris itself and analogous to the myotonic contraction of Thomsen's disease.

4. Infraspinatus Reflex.—A new reflex elicited by percussion of the infraspinatus area and resulting in an extensor movement of the arm, with lateral rotation. (This reflex was described in an article on the "von Bechterew's Reflex," in the Journal of Nervous and Mental Disease, May, 1901, by Dr. W. Pickett, Reviewer.)

5. Supra-orbital Reflex.—A controversial paper between McCarthy, von Bechterew and Hudovernig as to the nature of the supraorbital reflex.

6. To be continued.

McCarthy (Philadelphia).

REVIEW OF NEUROLOGY AND PSYCHIATRY

(Vol. 1, 1903, No. 1. January.)

I. Local Panatrophy. SIR WILLIAM R. GOWERS.

2. Psychiatry in General Hospitals. SIR JOHN SIBBALD. 3. The Relative Frequency of Disseminated Sclerosis in this Country

(Scotland and the North of England) and in America. Byrom Bramwell. I. Local Panatrophy. Sir William reports on a case seen by him in 1885, resembling a variety of spinal muscular atrophy, yet different. He suggests the term local panatrophy. In certain areas of the trunk, limbs, or face, which vary in diameter from that of a nut to that of an orange, or larger, there seems to be a wasting of all the subcutaneous tissues down to the bones, with slight change also in the skin, which is there distinctly thinner and slightly discolored. The aspect of the areas may be described as that of a subcutaneous excavation. They seem to be distributed quite irregularly, without apparent relation to the muscles or to the nerve distribution. Where the process is considerable the muscular tissue shares the wasting, but seems not entirely to disappear, and the electric irritability of that which remains is normal. In a case of Dr. Harry Campbell's recently shown at the Clinical Society there were similar patches in the right foot

in which the bones seemed also to have atrophied.

2. Psychiatry in General Hospitals.—This is an interesting general article on the relationship of psychiatry to neurology and the needs for a closer association of the two studies. The causes that have led to the separation are considered and the reasons why patients with mental diseases should be provided for in general hospitals fully discussed. quotes Maudsley as saving that "mental disorders are neither more nor less than nervous diseases in which the mental symptoms predominate, and their entire separation from other nervous diseases has been a sad hindrance to progress." A number of interesting figures are given showing the kind of psychiatrical instruction given in Germany where under the impulse of Griesinger great advances had been made in the treatment of

mental cases in hospital wards connected with the universities.

3. Disseminated Sclerosis in Scotland and in America.—Dr. Byrom Bramwell speaks of the relatively greater incidence of disseminated sclerosis in Scotland and the north of England than in America. In his statistics of hospital and private cases, the figures show one in 58 nervous cases to be disseminated sclerosis or contrasting his hospital experiences with his private work, the proportions are one in 54 and one in 62. He draws a comparison with the statistics as given in the Journal of Nervous and MENTAL DISEASE (vol. 29, May, 1902, p. 288), where in a discussion before the New York Neurological Society it was shown that only one in 22I nervous cases was of multiple sclerosis. Thus in Scotland and the north of England this disease appears to be three and one-half times as frequent as in America. JELLIFFE.

LE NEVRAXE

(Vol. 4, 1902, Fascicle 1.)

Researches on the Central Sensory Tracts. II. The Central Tract of the Nuclei of the Posterior Columns, or the Central Medullo-thalamic Tract. A. VAN GEHUCHTEN.
 The Endocellular Reticulum of Golgi in the Cerebral Cortex. S.

SOUKHANOFF.

3. The Posterior Root of the Eighth Cervical and First Dorsal Nerve. A. VAN GEHUCHTEN.

4. The Protoplasmic Prolongations of the Nerve Cells of the Spinal Cord of Higher Vertebrates. S. Soukhanoff and F. Czarniecki. 5. Lesion of Cauda Equina. Contribution to Study of Centers of Micturition, Defecation, Erection, Ejaculation and of the Anal Center. A. VAN GEHUCHTEN.

1. The Central Tracts of the Posterior Column Nuclei.—Van Ge-

huchten contributes an able and lengthy article on the subject of what becomes of the fibers having their origin in the nuclei of the columns of Goll and Burdach. He first brings out in a clear manner the divergent views of Forel, v. Monakow, Bechterew, and others with reference to the origin and destination of the fibers that make up the lemniscus, both median and lateral. His own researches were on rabbits in whom the nuclei cuneatus and gracilis were destroyed by puncture and scission and he shows among other things: (1) That there are no uninterrupted crossed fibers that go from the nuclei of the posterior columns to the cerebral cortex (in opposition to Tschermak); (2) the fibers that have their origin in the nuclei of the posterior columns terminate for the most part at least, in the lateral nucleus of the optic thalamus of the opposite side, thus constituting an ascending medullary thalamic tract; (3) this ascending medullary thalamic tract is exclusively crossed; (4) the fibers of this central tract that originate in the nucleus gracilis appear before those coming from the nucleus cuneatus. The former make up the greater part of the pre-olivary nucleus; the others the median part, all of the interolivary nuclei and the intra and periolivary fibers. In the median lemniscus it is difficult to separate the fibers from the nucleus gracilis and the nucleus cuneatus. The former seem to preponderate in the external portions of this part of the lemniscus, the others in the internal part; (5) the method of Marchi does not permit of the precise determination of all of the connections of the ascending fibers with the nuclei of the bulb, the pons, or the mesencephalon. All that can be asserted is that during its course the medullo-thal-amic tract sends a portion of its fibers to the corpora quadrigemina. Whether they go to the inferior corpus, as claimed by Bruce, Wallenberg and Rothmann, or to the superior corpus, according to Ferrier and Turner, he does not determine.

2. The Endocellular Reticulum in the Cortex.—Rabbit's brain is prepared in Veratti's fluid; see original for technic, which is complicated. network is found to be perinuclear. It does not reach the periphery of the cell. Its general arrangement is that of the cell outline, and the author believes it to be interpreted on some such structural basis as that described by Holmgren and Retzius as "intercellular canals or pores." Butschli's "ioam structure" may account for some of the picture.

3. Posterior Root of the Eighth Cervical and the First Dorsal Nerve.-

This is another contribution by Van Gehuchten to the study of the central termination in the nuclei of the posterior columns of the peripheral sensory nerves. The study of the degenerated tracts up to the nuclei show that they occupy a position slightly anterior and just external to the column of Goll.

4. Prolongations of Nerve Cells in Cord of Higher Vertebrates.—The Golgi methods show in adult rabbit cords three types of cells: (1) Bipolar cells with two dendrites at one pole and one from the opposite pole. Irregular varicosities are typical of both dendrites. Gemmules are also present at long intervals and are few in number. (2) Fusiform cells with many dendrites which are literally covered by gemmules. (3) Cells with four dendrites, occupying the white matter. These are extremely irregular in general contour.

In the anterior horns the dendrites fall into three general classes. Some are of uniform caliber; (2) others, more numerous, have moniliform swellings, and (3) moniliform dendrites. The nerve cells of the cord differ markedly in the matter of prolongations from those in the cortex. are more often varicosely swollen. The gemmules are fewer and vary more widely in shape and size. The authors describe in the cord a unique type of offshoots intermediate between the gemmules and protoplasmic processes.

5. Lesion of the Cauda Equina.—(Continued article.) JELLIFFE.

IL MANICOMIO

(Vol. 18, 1902, No. 1.)

Some Notes on Pathological Anatomy in the Insane.—G. Angiolella.
 The Basic Unity of Psychopathic Processes.—F. Del Greco.

3. Oscillations of the Metabolic Processes in the Epileptic.—N. Alessi and A. Pierri.

1. The Pathological Anatomy of the Insane.—The most prevalent lesion of the brain, corresponding to the frequency of general paralysis, is chronic fibrous leptomeningitis, associated with periencephalitis, the latter being characteristic of general paralysis of the insane. In 450 autopsies, this lesion was found in 108, namely in 94 men and 16 women. Among the various other lesions associated with the leptomeningitis, the author found meningeal hemorrhage, edema of the brain, softening of certain portions of same, also endarteritis deformans, insufficiency of the aorta, a large proportion of chronic nephritis, and most of all, omitting many other affections, lobular bronchopneumonia, namely, 46 cases. The author calls special attention not only to the multiplicity of the associated lesions, but also to the variety of their combinations, the former circumstance going to prove the author's contention that paralysis of the insane is a general disease, affecting not only the nervous system, but the whole organism through the vascular apparatus, which latter, surcharged with "toxic" blood, undergoes changes such as chronic inflammation; this in its turn causing alterations in various organs, and parenchymas of same; these therefore suffer in their nutrition, degenerate, become inflamed or undergonecrosis. As regards the variety of lesions it may possibly be explained by a particular susceptibility of certain organs in some individuals to alterations produced in the blood of the patients.

It is worthy of note that only in one case were there encountered syphilitic lesions, namely gummatous cicatrices of the liver; it must, however, be stated that in general it is rather difficult to discover at the autopsies of paralytics clear and indubitable traces of syphilis. For those cases in which the etiological factor of syphilis, alcohol or other poisons can be excluded, the author finds the causation of the affection in overwork, exhaustion (what the Frenchmen very appropriately designate as

surménage), which may be supposed to bring about the appearance of abnormal chemical products or an insufficient elimination of the normal metabolic processes, thus producing intoxication of the blood with the resulting vascular and parenchymatous lesions. It is claimed by many investigators that syphilis and alcohol are not sufficient by themselves to cause general paralysis, while the association of overwork or nervous exhaustion with these poisons frequently results in bringing about this condition.

Next in frequency the author finds hyperemia of the meninges and of the brain substance, largely of the cortex, as encountered in 66 cases; 52 men and 14 women. In six of these cases the hyperemia was the essential morbid condition producing clinically the picture of acute delirium. Another group of cases showed chronic or transitory mania. In these there was also found hyperemia in other viscera, in the kidneys, lungs, gastro-intestinal tract, spleen, etc., showing that the intoxication was general. Still another category included cases in which the cerebral hyperemia existed only as a local manifestation of an infectious disease in other organs; others again were epileptics who died during an epileptic attack; some suffered from cardiac affections, general debility, etc. Cerebral anemia was met with in but a few cases, in connection with general anemia and chronic exhausting affections, preeminently tuberculosis of the lungs and other organs.

Senile atrophy of the brain was seen in 11 cases, 5 men and 6 women, in connection with diffuse atheromatosis, external hydrocephalus, pulmonary and cerebral edema, cardiac hypertrophy, etc. It is, however, difficult to state positively where physiological senile involution ends and where the pathological process begins, although clinically the difference does exist, and deviations from physiological senile involution can be detected in life and classified similarly to what may be observed in the in-

sanities of puberty and menopause.

The author calls special attention to a very interesting fact, namely, the comparative rarity of focal affections of the brain in mental diseases; thus he records only six cases of cerebral hemorrhage (conected, however, with acute leptomeningitis, bronchopneumonia, etc.), and 6 cases of softening of the brain; in a simple epileptic, in a deaf-mute epileptic idiot, in a seventy-two year old woman with senile melancholia, softening of the corpus striatum and internal capsule in dementia, in an indefinite case of epilepsy (?) and in one of senile hypochondriasis. Then there were 2 cases with abscess of the brain, 3 cases of glioma, one case of ecchinococcus (10 cysts of various sizes), accompanied by diffuse acute leptomeningitis; also one case of syphilitic gumma (Jacksonian epilepsy), and one sarcoma of the meninges. The author is inclined to attach comparatively little importance to focal lesions: hemorrhages, neoplasms, softening, suppuration, in the production of mental affections. Of the accidental diseases he found acute catarrhal pneumonia (102 cases), pulmonary tuberculosis (71 cases), croupous pneumonia (42 cases), pleurisy (29 cases), endocarditis (40 cases), hepatitis, pericarditis, chronic intestinal catarrh, peritonitis, chronic nephritis (75 cases), etc. Some of these affections are not to be considered as simply accidental in the course of the mental malady, others may be so considered; to the first group belong first of all affections of the kidneys (75 nephrites in 450 autopsies), then aortitis and endarteritis, and others. The second group of cases simply shows how readily the poor insane with his abnormal or debilitated nervous system becomes peculiarly vulnerable and falls an easy prey to various infectious agencies, the most pernicious of which is tuberculosis, in all its forms; then the various pulmonites, pleurisy and pulmonary gangrene. On the other hand it is well known with what rapidity epidemic diseases spread in asylums. As regards the relation between infection and insanity, it is worthy of

note that some insane present a truly remarkable resistance to certain chronic intoxications, and especially to tuberculosis. There are observed cases in which the tuberculous process remains stationary for years and years, and the patient, after a prolonged confinement in bed, debilitated, exhausted, emaciated and profoundly anemic, dies eventually of slow marasmus. This is one of the facts we are unable to explain in the insane.

2. The Basic Unity of Psychopathic Processes.—A lengthy psychological sketch on insanity and degeneration which does not lend itself to ab-

straction.

3. Oscillations in the Metabolic Processes of the Epileptic.—It has long been observed that the epileptics present very frequently facial asymmetry (Laseque), strabismus and inequality of the pupils (Bianchi), also asymmetry in the coloring of the iris (Féré), as well as astigmatism. Tonnius finds left-handedness more frequently among epileptics than among insane. Zucarrelli noted asymmetry in the sides of the thorax. Other abnormalities relate to the length of the fingers, lack of visual acuity, impaired hearing, inequality in the tendon-reflexes. etc. This asymmetry in the epileptic is also manifested in his motor and psychic activity; and even though his mentality is frequently precocious, it is usually one-sided, and deficient ethically. Féré defines the character of the epileptic as "mobil et explosif." The author of the present investigation, desirous of verifying whether this morphological and functional disharmony finds a corresponding expression in the metabolic activity of the epileptic, examined for some time the urines of epileptics every day. The subjects were 7 epileptics who presented special variations in their deportment; the examinations extended to between 27 to 37 days. Their food was the ordinary hospital regimen. The patients were free from any visceral affection, and they were given no drugs. The principal examination was directed to urea and especially to phosphoric acid, which is considered as a true index of the activity of the central nervous system. The general considerations drawn are as follows: The quantity of urine at all times was rather scarce, presenting in some cases notable oscillations, especially in four patients who were typical epileptic subjects, irascible, morose, frequently menacing and impulsive. Nor is there noted any special diminution in the quantity of the urine on the days when the patients had epileptic attacks. The specific gravity, always rather high, was generally in inverse proportion to the amount of the urine. Here were observed frequent oscillations corresponding with the curve of phosphoric acid. The reaction of the urine was almost always acid. Neither peptone nor sugar was ever found in any of the urines, and hardly a trace of albumin, in one case. The amount of urea was generally low; whatever oscillations were observed were always in correspondence with the phosphoric acid curve. As regards this latter, the author states that the amount of it was usually rather small, and only sometimes increased to some extent. The variations in the amount of phosphoric acid were very considerable and almost always in correspondence with the excretion of urea. Although not positively so it may be stated in a general way that there was a certain constant relation between the variations in the amount of phosphoric acid, and the epileptic seizures. A close examination of the subjoined tables of minute observations of the cases brings out the fact that rapid and very considerable oscillations are found not only at the intervals, but also on the days when no attacks occur. This the author thinks is due to the fact that alongside with the above mentioned somatic and functional abnormalities there is in the epileptic a certain daily instability of metabolic activity as evidenced by the curves in the various constituents of the urine. This has been seen even in those patients in whom the attacks occur at long intervals. The author contends that the lack of equilibrium in the organogenetic forces of the epileptic as manifested by the various asymmetries and by the great variability of the organic and psychic functions stands in direct relation to a certain oscillating condition of the chemical productivity of the various tissues of the body, as especially manifested by the connection between the amount and specific gravity of the urine, and the excretion of urea and phosphoric acid. The erudite author devotes considerable space to the discussion of the present state of the phosphoric acid problem in its relation especially to the activity of the central nervous system.

(Vol. 18, 1902, No. 2.)

1. The So-Called Polyneuritic Psychosis.—G. Esposito.

2. Imbecility and Asexualism.—G. Angiolella.

3. The Suicidal Tendency and Suicide in the Insane.—R. Gucci.

I. Polyneuritic Psychosis.—It was Korsakoff of Moscow who first called attention to this psychosis, some time in 1887, since which time the disease has been known under his name. He was the first to prove its existence by the aid of 14 classical observations in which alcohol was absolutely excluded as an etiological factor of the polyneuritis, and instead were found sepsis (puerperal), typhoid, tuberculosis, etc. The condition of polyneuritic psychosis is characterized by symptoms of multiple neuritis associated with psychic disturbances such as amnesia, alteration of ideation, with the predominance in some cases of symptoms of irritability and excitement, consciousness being either entirely preserved or somewhat obtunded. All the symptoms may be of variable intensity. The patient retains no hold in his memory over recent events, while he may remember well past occurrences. Outside of the psychic state we find gradual emaciation, loss of strength, weakening of cardiac activity, certain changes in However, it does not seem that all the neurologists coincide as yet with Korsakoff in accepting this clinical picture as a pathological, well-defined entity, and Jolly proposes to designate it as Korsakoff's syndrome. As this psychosis presents a certain similarity with confusional insanity, some authors are inclined to consider it as but one variety of this last, and indeed the points of contrast between these two affections are many—in the etiology, symptomatology, and pathological anatomy. author presents two cases, one of an alcoholic, the other with a more or less definite history of syphilis and malaria, and rather moderate alcoholism. Both cases presented distinct symptom-complexes of acute confusional insanity. The author devotes considerable space to the psychological and anatomo-pathological considerations of amnesia, especially as met with in the so-called polyneuritic psychosis, and some consideration is given to the obscure and controversial problem of memory. One important fact may be established without any doubt, namely: that the disturbance of memory is a symptom common to all the pathological processes due to toxemia of the central nervous system, and that the variations in this disturbance stand, in some cases, in direct relation to the particular pathogenic agent, as well as to the special individual idiosyncrasy. The amnesia of the polyneuritic psychosis lacks any pathogenic character, and therefore the psychosis as a consequence bears no peculiar individual imprint of its own. In fact no diagnosis of any malady should be based on one or two symptoms, especially when neither the one nor the other is in any way pathognomonic. It is well to remember Nissl's advice as to arriving at a diagnosis of a mental affection: the diagnosis is to be drawn not only from the syndrome of symptoms as they appear but from a full and thorough examination of all the elements which go to make up the characteristic features of the disease, and from the antecedent history of the individual. The author thinks that the disease under discussion is but a part of the

great picture of confusional insanity, as had been asserted by Kræpelin, and cannot be considered as an affection *sui generis* among the infectious insanities.

2. Imbecility and Asexualism.—This is a clinical sketch based on the history of a youth, eighteen years of age, of a markedly tainted origin (mother "weak-minded," father stammerer, and derelict in his paternal duties to his offspring). The patient when grown old enough showed neither willingness nor capacity for work; was always weak-minded, and confined on this account several times during variable periods in the asy-The physical measurements, especially of the head, showed certain abnormalities; he also has slight gynecomastia, flat larynx, fat abdomen, protruding buttocks, and a marked dorso-lumbar curvature. complete absence of testicles, the scrotum hardly visible as a slight tumefaction, soft and delicate, of the skin; instead of the penis, a simple cutaneous appendix with a canal for the urethra, without any distinct features of body or glands, and no trace of any corpus cavernosum. Psychically the patient presents undoubted infantilism, and is much inferior in his mentality to his age, his behavior being that of a boy of a few years old. He demonstrates no affection either for any member of his family or his comrades in the institution. He lacks completely all the sexual instincts and sentiments, in fact he shows a certain degree of aversion toward women, although he seems to understand the difference between himself and the normal male. The question that interests one the most is whether the physical condition of the patient is simply coincident with his mental inferiority, or whether there is a certain connection between the two. It is a well known anatomical fact that atrophy of a certain region of the nervous system, and especially in the cortical zone, is not without influence on the development of the rest of the organism. Now, if a certain portion of the cortex is lacking, all the fibers which originate or gather there will either be absent or atrophy, thus inducing certain alterations in the various regions with which these fibers connect. May the absence or at least atrophy, in the case under discussion, of certain centers and of nervous paths leading to the sexual organs and functions be considered as the cause of deficient mental development? Can we establish a relation between the genital centers, wherever they be located, and the process of mental development, similar say to that between the center of speech and the higher special centers? The following facts seem to answer these questions more or less completely. The rapid increase in potentiality, in intellectual energy accompanied by marked changes in the character is accompanied in both sexes by the establishment of secretion in the genital organs, by secondary sexual characteristics, the appearance of hairy growth over the pubic region, the increase in size of the larynx in man, and the mammary glands in the woman, etc. It is at this age that the imagintion faintly awakens, and the sexual function which is the basis of the most elementary social organism, the family, causes the appearance in the individual of the sentiments of paternity, filial love, etc. In the same manner must we expect to find a decadence of the mental faculties, and a change of character in case the sexual functions be extinguished; it is the involution, as it were, of the whole organism which gives rise to such psychic deficiency.

3. Suicide Among the Insane.—The problem of suicide in general in its sociological aspect, and of suicidal tendencies among the insane in particular is one which has attracted the attention of alienists for a long time past. Thus Esquirol, Pinel, Marcé, Dagonet, Bucknell and Tuke, Maudsley, Kræpelin and others have all occupied themselves with this most important question, each of them offering his views on the solution of this problem. Latterly the Italian investigators, as Morselli (in his work

"Il Suicidio"), L'Antonini and others, contributed some very valuable information on the subject. The author's study is based on the observation of 132 inmates of an asylum who have shown positive tendencies toward suicide (out of a total of 405). The greatest number, namely, 29, is found among melancholics; then follow those affected with dementia præcox, epileptic insanity, mania, paranoia, and so on down the list. Among those with precocious insanity, the tendency has been observed only during the periods of depression. But of course, it is the real melancholics that present the most classical form of an obstinate tendency to suicide; in them it is continuous, invincible, not to be easily overcome. In them it may even be observed in status raptus. As regards the epileptics there is a greater danger in their impulsiveness as regards the destruction of those around them; but the period following the epileptic "explosion" is marked by such a degree of depression that the patient falls a ready prey to the suicidal tendency; to this must be added the various hallucinations that follow after the attack and that may bring about an irresistible impulse toward suicide, which they frequently commit in the most unexpected and unlooked-for manner. The alcoholic is subject to suicide during grave mental depression associated with various hallucinations. The statistics gathered by the author, covering a period of some sixty years, show that there were but 22 suicides in the asylum (at Florence), a really small number if we take into account that the yearly number of suicides in Italy alone is more than 2,000, and that the asylums shelter insane with irresistible suicidal tendencies; in fact hardly one per cent. of those admitted destroy, or rather succeed in destroying themselves. The author brings forward certain statistics as regards the sexes of these suicides, their ages, their means for the completion of the attempt, the season of the year, and the places where these successful attempts were accomplished—statistics which, we must confess, are hardly of much scientific value, as they are based upon a comparatively meager number of subjects and thus admit of no generalization, the chief value of statistical investigations as regards practical application. Still it must be recognized as a sad fact that suicides do occur in the insane asylums among those patients who are addicted to suicidal tendencies, and such inmates require special care and rigid surveillance on the part of the attendants to frustrate their attempts at self-ALEX. ROVINSKY (New York). destruction.

MISCELLANY

THE CRIMINAL EQUIVALENT OF INSANITY. Wm. B. Noyes. Medical News, October 11, 1902.

This paper, discussing the obscure problem of so-called moral insanity, presents two cases. The first is the common type of "bad" or "incorrigible" boy, unfortunately a son of wealthy parents, in whose case the association of some mental backwardness and fits of ungovernable temper with numerous moral defects, indicates the presence of a psychosis presenting chiefly moral symptoms. The second case indicates the possible substitution of immoral or criminal tendencies for the common symptoms associated with a mental breakdown. In this case a short attack of acute insanity changed a boy of fairly decent tendencies into a professional crook. The indefiniteness of the legal attitude toward such a case is shown by the fact that he was first sent to Matteawan Asylum for insane prisoners, and later for the same offense to state's prison. A careful analysis of the history of law relating to such cases of partial insanity, shows decided variation of methods and by different states, especially marked in their use of such expressions as "impulsive insanity" and criminal responsibility. A psychological treatment of the subject attempts to analyze defects of the will and reasoning powers. The

importance of fixed ideas or obsessions on obscure cases of crimes cannot be too frequently brought to the attention of jurists. The presence of minor eccentricities is important, for there is no hard and sharp line to be drawn between the eccentric and criminal action. Such mental eccentricities are often as clearly stigmata of degeneration as the more definitely understood physical stigmata. The cases of moral defectives may be grouped in three classes: (1) The moral idiot who has not a sign of a moral concept, abstract or concrete; (2) the moral imbecile who knows the concrete but not the abstract; and (3) the "débile" who knows both concrete and abstract, but lacks the "tone of ethical feeling." Such a man knows right and wrong, but will not on that account be kept from WM. B. NOYES. committing wrong.

THE PREVENTION OF DEFORMITY. Wisner H. Townsend, M.D., Journal

American Med. Assoc., Sept. 13, 1902.

Practically all deformities due to poliomyelitis or infantile paralysis can be cured. The original lesion does not primarily produce a deformity, but simply a loss of power in the muscles. The contractures come on very slowly. Non-congenital club-foot may be divided into (1) simple acquired; (2) paralytic; (3) traumatic. (1) Simple acquired clubfoot includes all cases due to rickets, rheumatism, chorea, hysteria and various other surgical and medical conditions. (2) The paralytic includes all cases due to poliomyelitis anterior, hemiplegia, meningitis, myelitis, progressive muscular atrophy, spastic cerebral and spinal paralysis, compression myelitis, irritation of pyramidal tracts and syringomyelia. Half the deformities are preventable by proper appliances.

School Life and Insanity. J. S. Lankford, M. D. Medical News, Sept.

27, 1902. The writer discusses high pressure in the school life of children. Too much is attempted in the school curriculum. If pupils are examined, they will be found excitable, emotional, wakeful, discontented and suffering often from headaches and nervous dyspepsia, the girls showing a decided tendency to hysteria, with here and there spots of anesthesia and hyperesthesia discoverable, and various nervous symptoms connected with their menstruation. Excessive piano practicing produces many vic-

A large number of children come out of school with unbalanced nervous and mental systems, weakened will power and an incurable "hurry habit," engendered by school life. If troubles connected with business or love then develop the boy or girl is ready for serious mental disease. The writer advocates (1) reducing the course of study; (2) developing the body co-equally with the mind; (3) instituting a better classification of pupils and their individual tendencies; (4) object lessons rather than books; (5) introducing industrial training as rapidly as possible. WM. B. Noyes.

Hospitals for the Neuropathic and Psychopathic. Richard Dewey.

Journ. of the Amer. Med. Assoc., Sept. 27, 1902.

Twenty years ago not a single institution existed in this country for the care of the criminal insane, or for the separate treatment of the epileptic, criminal or alcoholic classes. Since then there has grown up a strong interest in and demand for special and separate care for the acute and curable insane. Criminal asylums, epileptic colonies and hospitals are rapidly springing up. Convalescent homes for nervous and mental maladies are being developed or suggested. Such homes are specially adapted to the treatment of hysteria, neurasthenia, hypochondria, mild melancholia, and harmless paranoia. There is also a large class of organic diseases affecting the brain or spine, with or without some mental symptoms which are not suited to a general hospital, which can be treated in such homes. A psychopathic hospital is needed in every large city for cases of the type of acute or subacute psychoses, but should be located in the quiet suburb. There should be not more than twenty-five patients to each physician, and five patients to each nurse; twelve to thirty patients should be the limit of any one building, and the cases should be carefully classified, secluding the noisy and turbulent.

W. B. Noyes.

UREMIC APHASIA. David Riesman. Jour. Amer. Med. Assoc., Oct. 11, 1902.

The poison of uremia, presumably a form of auto-intoxication, partly associated with disease of the kidneys, acts chiefly on the nervous system, although no organ or tissue escapes. Like hysteria, uremia often presents distinctly focal symptoms, such as hemiplegia, monospasm and aphasia. The existence of uremia does not exclude the possibility of hemorrhage or embolism, since patients with Bright's disease have for the most part friable arteries. Uremic aphasia may be associated with right sided paralysis, or occur alone. Of twenty-nine cases of uremic aphasia in literature fifteen were pure aphasias; fourteen had some coexisting palsy. Children are especially liable to it. Its onset is sudden. The type of attack is generally motor aphasia of the subcortical type.

Writing may be affected also.

The degree of aphasia varies from total loss of speech to a slight paraphasia, with or without paragraphia. Of the twenty-nine cases, hemiplegia was present in ten instances; in two facial paralysis and in two right brachial monoplegia. Convulsions may precede or follow the development of aphasia which may be unilateral or general. Hemianopsia may be observed. More frequently amblyopia. The uremic paralysis and aphasia may be so fleeting as to be almost overlooked. It may last five minutes, or twenty-four or forty-eight hours, or sometimes a week. The only lesion demonstrable at autopsy is edema and congestion. The kidney is apt to be the contracted kidney. The cause of the uremia is still unknown, whether a retention of excrementitious substances in the system, or an albumin intoxication, with some structural alteration of the vessels in the area affected.

W. B. Noyes.

Suspension and Corsets in Chronic Meningomyelitis. Personali

(La Semaine Médicale, 1902, No. 24).

This author has made use of plaster jackets in connection with suspension in the treatment of chronic meningomyelitis. It is his opinion that suspension will rupture all adhesions between the meninges and their adnexa and establish a sufficient flow of blood, and that the immobilization in the jacket will maintain the conditions of maximum extension and favorable circulation, so making sure the good effects of the suspension. The treatment is applied daily, the first suspension lasting only one minute, gradually increasing to four or five minutes, then remaining constant for about ten or twelve days. The jacket is put on during suspension as the body is then supposed to be in complete extension. Sayres' method is used and the jacket extends from the highest point possible to the iliac crests. The first jacket applied remains in position for three months, and during this time the patient is kept in bed, all organic functions being performed in this position. Walking or even sitting up is not permitted until the end of the third month. The first jacket is then removed, suspension again employed and a second jacket placed in position in the same manner as the first. The patient is not now compelled to remain inactive, however, motion being possible as soon as the plaster has hardened. After two months the jacket is replaced by a system of carefully applied bandages, and after this has been in use for two months the treatment is considered complete. This method is largely protective in its results, and it is also necessary to remove all possible causes of disease, such as alcoholic excesses, etc., and to make use of tonic measures, such as subcutaneous injections of cocadylate of soda. Sixteen cases have been subjected to the foregoing measures by the author during the course of ten years, resulting in eight complete cures, four cases of marked improvement, four doubtful results, as complete treatment was not taken. Of these last two resulted later in failure. This treatment should be inaugurated early to obtain good results and is completely useless where there are manifestations of syphilis.

A CATATONIC CASE OF DEMENTIA PRAECOX. FR. MEENS (Psychologische

en Neurologische Bladen, 1902, No. 1).

This author reports a case of a patient of English birth, twenty-two years old, of excellent parentage, and as far as could be ascertained no hereditary affection. The symptoms first appeared at the age of fourteen and at the age of fifteen melancholia and despondency increasing the pa tient was sent to Germany for treatment. During two years there was an increase of melancholia, hallucinations of persecutions, etc., with twitching of the nerves and misophobia. Although his mind continued clear he gradually lost self-control, the twitchings becoming more vio lent with an ever-increasing tendency to inflict injury upon his person. These injuries were all done with the right hand upon the left side, such as punching the left eye until the sight was entirely destroyed, striking the head against the bed and punching his side until a rib was fractured. With these fits of mutilation there were convulsive contractions of the muscles of face, throat, arms, trunk and abdomen. As self- control gave way there were violent stampings and screaming. He asserted his inability to repress these manifestations. The symptoms of touch disturbance were of a neurasthenic nature and there was neither hyperesthesia nor anesthesia nor analgesia which invariably occur in hysteria. He complained of a strange substance in his throat, of fever, toothache, etc.; he believed that the left half of his body was less developed than There was a series of nervous tremors in close sympathy with these touch disturbances. The patient was given to self-abuse, a habit he contracted at an early age. He would frequently make violent efforts to expel the imaginary substance from his throat, or beat his jaw during toothache, and after urinating or stool passage he would pull the penis or force the rectum with such violence that the anus sometimes projected and bled and the scrotum was so pulled out that traumatic orchiepididymitis often occurred. The patient gradually grew very suspicious and lost all power of decision and interest in outside things, but he remained conscious of his condition, and unlike persons with mania for inflicting injury on themselves, he would complain of pain where he struck himself. He was well-formed and pleasant looking, head of normal form and measurement, face asymmetric, a little drawn on the left side, muscles well-developed, sound lungs, a hyperchlorhydric stomach, appetite whimsical, pronouncedly vegetarian, genital organs originally normal but terribly distorted by onanism. A gradual decline, when skin became atrophic and muscles decreased, was followed by death at the age of twenty-three. The writer was not satisfied with the diagnosis of "doubt mania" given this case. He was of the opinion that it was rather an unusual case of hebephrenia, a theory borne out by the age at which the first symptoms appeared, and the onanism, as well as the over-wrought mind, the melancholy and psychic delusions. his unusual consciousness adds strength to the theory and throws light

upon these catatonic movements which were of psychic origin. The second series of movements was related to his organic touch, but the third class did not seem to be capable of explanation, either by outsiders or the patient himself. It is the author's opinion that the spasmodic drawing of the muscles which caused the self-mutilations and twitchings was the effort of the nerves to get rid of the unbearable pressure on the brain which the patient described as a weight of 100 kilograms. The disassociation of the right arm, which always played the chief part in the mutilations, is also worthy of note in this connection.

Jelliffe.

TETANY AND MYOTONIA IN INFANCY. C. Hochsinger (Rev. Mens. des

Maladies de l'Enfance, June, 1902).

The author holds that myotonia is a neurosis distinct from tetany, and the pseudo-tetanus of Escherich and belongs to the early period of Tetany in nursing children does not differ from the same manifestations in adults. Intermittent and tonic contractures, particularly in the muscles of feet and hands, with hyperexcitability of the motor nerves and the muscles are its main characteristics. The most important symptom of this hyperexcitability, which is the essential condition of tetany, is that of Chvostek, the sudden contraction obtained by striking branches of the facial nerve. In myotonia this reaction is not Trousseau's symptom is also present in tetany, consisting in the reproduction at will of the paroxysm, by pressing the affected part in the direction of its motor nerves or blood-vessels. Pressure on the nerves of the brachial plexus will in myotonia produce the contraction of the fingers, called the "phenomena of the fist," a sign seen only in infants six to eight weeks old. The fact that in early infancy the inhibitory centers presiding over the reflexes are not fully developed would account for this phenemenon without dependence on general hyperexcitability. True infantile tetany is developed solely on a rachitic foundation and is a neuro-muscular affection. As in rickets Kassowitz found that the largest number of cases developed in the early spring months, disappearing entirely at the end of summer. Myotonia, however, has no connection with rickets, developing in the course of gastro-intestinal intoxication it is not manifest at any particular season, except that the most serious intestinal disorders are likely to occur toward the end of summer. Myotonic contractions sometimes persist for weeks at a time, while those of tetany are paroxysmal and intermittent, in the former the attack comes on gradually, in the latter it is quite sudden. Myotonia exhibits no mechanical galvanic hyperexcitability of muscles or nerves and there is absence of facial symptom, neither is there evidence of the laryngo-spasms and the tonic and intermittent spasms of respiration usually occurring in tetany. Myotonia is manifest in the first weeks of infant life, while tetany usually appears at a later period. The contractions of tetanv have a tendency to recur, while in myotonia the attack always disappears with the cause. The spasms of myotonia are not affected by the phosphorus treatment which has shown good results in the neuro-muscular affections of infancy. JELLIFFE,

LATENT BRAIN ABSCESS BECOMING EVIDENT WITH SYMPTOMS OF ATROPINE POISONING. E. Aufrecht (Arch. f. klin. Med., Vol. 72, Nos. 5.

and 6).

Being summoned to attend a case of supposed bronchial asthma in a laborer, the author administered atropine. This was followed by severe headache, twitchings, dilation of the pupils and marked confusion. These phenomena gave doubt as to the real diagnosis, especially as the prescription would appear to have been stronger than was intended. Five years previous the patient had received an injury to the head, and

although he had then suffered from shock he had apparently made a complete recovery. The autopsy, however, revealed a large abscess in the left temporal region, which had never made its presence apparent during the five years since the injury had been received. JELLIFFE.

EPIDEMIC POLIOMYELITIS WITH REPORT OF TEN CASES. D. H. MacKen-

zie. Medical Record, October 4, 1902.

Thirty cases of poliomyelitis occurred near Poughkeepsie in 1899, in an epidemic resembling the extensive epidemics near Boston in 1894, and in Vermont during the same year. Of the ten cases reported by the author and seven others occurring in the same locality only two presented the classical symptoms of poliomyelitis. One case was undoubtedly cerebro-spinal meningitis, having the convulsions, coma and other symptoms. Three cases died, and in each the paralysis began in the lower extremities and extended upwards until the muscles of respiration became involved. Like the Vermont outbreak, while the clinical history of the majority of cases was typical of poliomyelitis, in some of them the features of peripheral neuritis were seen, while many of the fatal cases gave symptoms resembling cerebro-spinal meningitis. There is then presented the interesting fact that during the same epidemic and presumably from the same cause, there occurred cases of poliomyelitis, neuritis and cerebro-spinal meningitis. Certain mild cases of poliomyelitis in this epidemic terminated in complete recovery. Two fatal cases were diagnosed as Landry's paralysis, and reported in medical literature as such. From the fact that most of the cases were those of adults, from the pain, tenderness and paresthesia of the early symptoms, and from the fact that the paralysis extended from below upward, and also that all the cases which did not prove fatal in the acute stage except two fully recovered, we may conclude that a large percentage of these cases were really multiple neuritis. From the association in the same epidemic of cases of poliomyelitis, cerebro-spinal meningitis and multiple neuritis, the same microbic infection would seem to be present.

W. B. Noves (New York).

HYSTERIA AFTER TRAUMATISM COMBINED WITH AN ORGANIC NERVOUS DISEASE. Meyer (Berliner klinische Wochenschrift, Aug. 4, 1902). The author reports a case in which a man of forty-nine years, who has always been healthy, developed hysteria after an accident to his right elbow. He developed weakness of the extremities, paresthesia, shooting pains, tremor and a hesitation in speech. These symptoms varied in in-

tensity, were irregular in nature and atypical in character. This fact with the general demeanor of the man led the author to suspect hysteria. The patient, however, also presented optic neuritis, Argyll-Robertson pupils and loss of knee-jerks. Meyer therefore concluded that the diagnosis consisted in an organic disease of the central nervous system combined with hysteria. He believed the organic condition to be locomotor ataxia or beginning progressive paralysis. W. E. Rатне (Philadelphia).

ACROPARESTHESIA FOLLOWING TRAUMATISM. Sommer (Berliner klin-

ische Wochenschrift, Oct. 6, 1902).

Sommer reviews the literature concerning acroparesthesia and reports two cases following injuries. Acroparesthesia depends upon an irritation of the vasomotor centers. The arteries become contracted and the nourishment of the nerve endings in the extremities is diminished. The main symptom is an unpleasant feeling in the hands, and more rarely in the feet. It is worse at night and morning. Occasionally these feelings change to acute pain. It is rarely limited to the peripheral distribution of any one nerve. The skin presents but slight or no disturbance in sensibility. There is no pain on pressure over the nerve,

and no gross changes occur in motion. Its development is gradual. The etiology is not clear. This disease occurs most commonly in women at the menopause. Sommer advises that when paresthesia occurs after an injury, the possibility of acroparesthesia should be considered, and thus spare the patient the accusation of simulation. W. E. Rathe (Philadelphia).

Myelorrhaphy followed by Return of Function. Stewart and Hart

(Phil. Med. Jour., June 7, 1902).

These authors report the case of a young woman twenty-six years old, who had been shot, one of the bullets entering the spinal canal at the seventh dorsal vertebra, and causing complete abolition of motion and sensation below the level of the tenth dorsal spine. The operation, performed three hours after the shooting, exposed by incision and dissection that the right lamina of the seventh dorsal vertebra was crushed in, and the left lamina fractured at the base, while on removal of the spines and laminæ of the seventh and eighth dorsal vertebræ the cord was discovered to be completely divided, with a separation of three-quarters of an inch after the lacerated nervous tissue had been removed. The ends of the cord were drawn together by three chromicized gut sutures, one passing anteroposteriorly and the others transversely through the entire thickness of the cord. They were unable to approximate the dura. A small drain of gauze was left in place for twenty-four hours. The muscles were united by means of catgut, and silkworm gut was used to close the skin. After the operation the patient's condition was excellent, the wound healing by the seventh day. Sensation began to return in a few days, flexion of the foot was recognized after about two weeks, followed by powerful leg contraction, with consciousness of deep pressure over the limbs and abdomen. In three weeks pin-pricks could be felt as far as the umbilicus, although the patient could not localize the pain, urine could be felt in the bladder, but not voided, and the patellar reflex returned. After two months the knees could be fully bent, and after five the patient was able to slide out of bed into a chair without aid. The menses returned during the seventh month, and by the eighth good control over the bladder and bowels was regained, and she could stand without support. General improvement continued until in fourteen months in a tub bath she was able to feel water on the lower extremities and distinguish between hot and cold. In sixteen months she was capable of flexion and extension of the toes, legs and thighs, though flexion was stronger than extension. General health and sensation of temperature, pain and position were excellent. When the cord is divided or crushed, "no interference" is a good maxim for spinal surgery. There is special indication of myelorrhaphy when the cord has been cut in two by a sharp instrument or projectile, and it is the opinion of the investigators of this case that there should be immediate exploration to decide the exact nature of the injury and whether the symptoms are caused by pressure or by concussion. JELLIFFE.

Book Reviews

NINTH ANNUAL REPORT OF THE BOARD OF MANAGERS OF THE CRAIG COLONY FOR EPILEPTICS.

The yearly report of the Craig Colony, by its Medical Superintendent, Dr. William P. Spratling, have always been characterized by original data the value of which in the colonization of epileptics can hardly be overestimated. The present report, the ninth, is no exception to the rule, and presents an excellent summary of new facts not heretofore in evidence.

The past year's work has proven very satisfactory in that the Colony has discharged more patients as improved than in any previous year, while the death rate has been but 4 I-3 per cent.; some phase of epilepsy was the cause of death in 14 of the 33 cases. 182 patients were admitted for the year, 116 men and 66 women; the census, October 1, 1902, the close of the fiscal year, was 826. During the year 27 men and 11 women were discharged improved; 8 men and 3 women unimproved; while 12 were sent to state hospitals for the insane. A more careful selection resulted in

a better class of cases being admitted for the year.

The desirability of a closer control of some patients who should remain at the Colony, but are not so inclined, is strongly advised as well as the necessity of all the houses for the colonists to be made thoroughly homelike in architecture and furnishing. The whole life should be simple and systematic; as strenuous life is not intended for the epileptic. A case illustrating the apparent direct transmission of the disease is graphically portrayed and the urgency of some legal restriction to marriage in the epileptic class is advocated. The futility and quackery of nerve nostrums is thoroughly discussed. The Colony is desirous to obtain samples of such preparations for analysis. The preponderating influence of heredity is given great prominence in the etiology of the disease; a combined heredity such as alcoholism, tuberculosis, epilepsy and insanity was proven definitely in 48 per cent. Provisions for the isolation of the tubercular and those suffering from the communicable diseases are asked for. The Craig Colony prize was given this year to Dr. Julius Donath for a paper upon "Cholin in Epilepsy and Its Significance in the Production of Convulsive Attacks. The educational, industrial and agricultural features of the Colony are excellently described and illustrated.

A special appropriation of \$150.000 is asked for another year to provide accommodations for a large waiting list. The report is accompanied by a complete table of contents and an index. One happily misses the presence of dry-as-dust and meaningless statistics endlessly reiterated in so many annual reports of institutions. We are informed, however, that scientific data bearing on the nature and causation of epilepsy are kept in the medical records of the Colony, and may be obtained for study on application by those interested. The report in its entirety will be of great interest to both lay and professional readers who wish to learn of the progress of work in this wide field of modern philanthropy. The report is an example of what institutional reports should be.

L. Pierce Clark.

Arbeiten aus dem Neurologischen Institute an der Wiener Universität. Herausgegeben von Prof. Dr. Heinrich Obersteiner. IX Heft. Franz Deuticke, Leipzig und Wien.
In the past several volumes of Prof. Obersteiner's "Arbeiten" have

been reviewed by the present writer, and occasion has been taken to speak in terms of praise of the work done in this institute. The latest volume is quite as commendable as any that has preceded it. It is composed of papers that are purely anatomical, or of papers that are clinicoanatomical. If less attention is paid to the former in this review, it is because papers of this character interest a smaller circle of readers, and also are difficult to describe in the space allotted to a review.

The ninth volume begins with two anatomical papers; the first is a study of the brain-stem of the *Delphinus delphis*, by R. Hatschek and H. Schlesinger, and the second a study of a brain from an Australian negro, by J. P. Karplus. The first paper represents a remarkably painstaking and time-

consuming investigation.

O. P. Gerber and R. Matzenauer have studied a very interesting case in which leprosy and syringomeyelia were present in the same person, and it seems to be the first case of the kind on record. They do not jump to conclusions, and are cautious in what they have to say regarding the relation of the two diseases. Lepra bacilli were found in a piece of skin excised during the life of the patient, but none were found after his death in the peripheral nerves or spinal cord. These authors recognize that the absence of bacilli, or of histological changes in the nervous tissues, does not show convincingly that the leprosy had no causal relation to the syringomyelia, and further they mention that the very advanced age of the patient, over eighty, suggested an unusual cause for the syringomyelia. They, however, incline to the view that two diseases without intimate connection occurred in the same person, but they prefer to wait until other cases are reported in which a causal relation is more clearly shown before they give a positive decision regarding their own case. They also discuss the one-time important question of the relation of Morvan's disease to syringomyelia.

K. Tsiminakis describes a case of hypertrophy of the brain in a child eight years old. The brain without fluid in the ventricles weighed 1920 grammes. The hypertrophy affected all parts, and was not caused merely by proliferation of the neuroglia. It was a con-

genital condition. Chronic meningitis also was found.

R. Breuer and O. Marburg report two cases of apoplectiform bulbar paralysis, and then attempt to explain the symptoms observed in their two cases by the lesions found, and by a comparison with other cases in the literature. Disturbance of sensation in the face is attributed to degeneration of the spinal root of the trigeminus. They show that a slight degeneration of bulbar nuclei may exist without causing symptoms, and that paralysis of the soft palate, often bilateral with a predominance of the paralysis on the side of the lesion, is the result of implication of the middle or more cerebral portion of the nucleus ambiguus or its fibers, and that the facialis is scarcely concerned in this paralysis at all. The bilaterality is explained by partial decussation of fibers. From the study of a case the reviewer has recently made, he can support this opinion to the extent that the facialis is by no means the chief nerve to the soft palate. Breuer and Marburg conclude that deglutition and the motor innervation of the larynx depend on the integrity of the nucleus ambiguus and its fibers. The ptosis of one eyelid in association with myosis and retraction of the eyeball in their two cases is explained as sympathetic ophthalmoplegia, and they are led into a study of this condition, with the conclusion that sympathetic fibers pass through the internal capsule, decussate in the pons, and descend through the medulla oblongata to the spinal cord. A lesion of these fibers causes sympathetic ophthalmoplegia; on the opposite side if the lesion is at or above the optic thalamus; on the same side if the lesion

is in the pons or medulla oblongata. A comparison of the cases of apoplectiform bulbar paralysis with one another shows that the most common symptom is contralateral dissociation of sensation with paralysis of deglutition and often aphonia or paralysis of the soft palate, and sympathetic ophthalmoplegia occurs only when the lesion is in the dorso-medial por-

tion of the substantia reticularis lateralis.

In the paper by J. Tarasewitsch a study of the degeneration caused by a lesion of the optic thalamus and lenticular nucleus is presented. The direct ventrolateral pyramidal tract, first described by the reviewer, Tarasewitsch suggests may be merely the direct pyramidal tract in an abnormal position. This is improbable even though in his case the direct pyramidal tract was intact. In Tarasewitsch's case the lemniscus was relatively intact, but fornix fibers were much degenerated.

S. Kreuzfuchs has attempted in his paper to give the extent of the

surface of the cerebellum.

R. Hatschek has a second anatomical paper in this volume; a comparative study of tegmental fibers and of the central trigeminus tract. E. Zuckerkandl writes on the olfactory fibers of Dasypus villosus.

Acutely developing oculomotor palsy is not common, and the case reported by L. von Frankl-Hochwart is an important one. A man, who had had right-sided hemiplegia about nine months, observed suddenly while writing, a cloudiness before his right eye, and a half hour later he had diplopia, otherwise he was in good health. By evening of the same day he had right-sided ptosis. Death occurred twenty-eight days later. clei of the oculomotor nerves appeared to be nearly normal. The oculomotor nerves were studied by the Marchi method, and the left was found to be normal, but acute interstitial neuritis was found in the right. An explanation for this peculiar finding is not offered, as there was no compression from an enlarged artery, and no meningitis, and signs and history of syphilis were wanting. The case shows very clearly that paralysis of the external ocular muscles may occur without paralysis of the internal ocular muscles when the lesion is neuritis and not in the nuclei of the oculo-

By "symptom-complex of Benedikt" is understood hemiparesis with involuntary movement of the paretic side and crossed paralysis of the oculomotor nerve. In the paper by H. von Halban and M. Infeld the literature bearing on this subject is considered, and two cases, one with necropsy, are reported. The case with necropsy was as follows: A girl, aged fifteen years, fell on her head when she was ten months old, and became hemiplegic on the right side and had left-sided ophthalmoplegia. Later she had convulsions and hemichorea in the paralyzed limbs, and the right oculomotor and abducent nerves became paralyzed. She died from general tuberculosis. A calcified tubercle, having destroyed the nucleus ruber, was found in the left tegmentum. The trauma may have aided in the development of the tuberculosis. The lesions found did not fully explain the symptoms.

M. Schacherl describes the anatomy of the spinal cord of the Mylio-

batis aquila.

Prof. Obersteiner brings the volume to a close with an interesting anatomical paper. In a brain examined and described by him the lower olives to the naked eye, apparently, were absent. The clinical history could not be obtained. Microscopical examination showed that the pyramidal fibers extended on the outer side of each olive to the sulcus postolivaris. Obersteiner thinks that displacement of pyramidal fibers is not very uncommon, and he gives illustrations of variations in the position of these fibers in man and lower animals; in his opinion variations in these tracts are more common than in any other tracts. SPILLER.

Leitfaden der Elektrodiagnostik und Elektrotherapié für Praktiker und Studierende. Von Dr. Toby Cohn, Nervenarzt in Berlin. Zweite vermehrte und verbesserte Auflage. S. Karger, Berlin.

We have had occasion in speaking of the first edition of this work to commend it in no unmeasured words as a thoroughly practical work on the subject of electrodiagnosis and that the medical world at large has coincided with our opinion is evidenced by the appearance of the second edition within a comparatively short interval of time.

Electrotherapeutics has not remained in statu quo during this period and we are not disappointed in looking through this volume, for here we find that the new researches and conclusions, and practical de-

vices of the last three years are incorporated.

The therapeutic portion in particular has been rewritten and enlarged. New special subjects, such as the Tesla stream and other new forms of electrical application have been incorporated, making the work

the best of its kind.

The author has limited the portions bearing on pure physics, and we believe very wisely, to only that outline that is sufficient to understand the construction of the apparatus used. Muscle physiology is also well handled—concisely, scientifically and practically. We have seen authors of other works on the same subject lose themselves in the minutiæ and intricacies of muscle physiology—here not so. The major part of the work is devoted to the practical ends. This is what makes it so commendable. The mechanical construction of the book is excellent.

Jelliffe.

The Mattison Method in Morphinism. A Modern and Humane Treatment of the Morphine Disease. By J. B. Mattison, M.D.

E. B. Treat & Company, New York.

This brochure of forty pages gives in detail the outlines of a form of treatment of the morphine disease which for years has proven helpful, since it has been constructed on sound principles and based on a funda-

mental knowledge of the conditions.

There seems to be little doubt but that there has been within the past decade an enormous expansion in the use and abuse of various narcotic drugs, and the end is not yet in sight. The methods of treatment here outlined are humane and scientific and worthy of a wide recognition.

Jelliffe.

The American Year Book of Medicine and Surgery. Under the General Editorial Charge of George M. Gould, M.D. Medicine. W.

B. Saunders & Company, Philadelphia and London.

The year book comes this year with the same dress as last, in two volumes, making a more convenient book for reference than the older

one bulky volume publication.

Such a publication as this should be, we believe, in the library of every practitioner who is at all interested in the scientific side of his calling, and of the many kinds of condensed literature of the day the year book still maintains its place in the front rank, exceeded in value by none

and equalled by but one in the English language.

Dr. Archibald Church, of Chicago, retains the editorial supervision of the work in Nervous and Mental Diseases, and has given a most excellent résumé considering the space at his command. To be able to compress the more important features of the year's work in fifty pages, when the Neurological Jahrsbericht occupies over one thousand, is certainly a feat requiring no mean ability; and yet most of the important work has been included in neurology. Psychiatry has been neglected.

There is still too much of the patchwork character in the book and not enough working over of the material. Less clipping and more con-

densation of several articles into one would be advisable.

Brown.

THE

Journal

OF

Nervous and Mental Disease

Original Articles.

REPORT OF TWO CASES OF BULLET INJURIES TO THE LEFT LATERAL HALF OF THE UPPER PORTION OF THE SPINAL CORD.

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AND

EDMUND J. A. ROGERS, M.D.,

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(Case I.—Spiculae of bone driven into left side of sixth or seventh cervical segment; operation, death on the seventh day. Case II.—Compression of the left side of cord opposite the first and second costal segments by a 22-caliber bullet lying external to the dura; operation, recovery.)

Case I.—Thomas E. W., white, single, act. 31, gambler by occupation, born in Ohio, lived in Colorado since 1885, was admitted into St. Luke's Hospital February 23, 1898.

Personal History.—He had most of the common diseases of childhood, but apparently made complete recoveries from them. When he was 12 years old he ran a harrow pin through his left heel. A scar is now visible just behind the internal malleolus. He had typhoid fever when 19 years old and was sick for six

¹This paper was prepared for the meeting of the American Neurological Association, June, 1902, by the late Dr. Eskridge in association with Dr. Rogers.

or eight months. He has been a hard drinker for a number of years. He took the Keeley cure in 1893, and stopped drinking for about a year. Since 1894 he has taken from twenty to thirty drinks of whiskey each day. He has used a great deal of tobacco, both smoking and chewing, for a number of years. He has been addicted to indiscriminate and excessive sexual indulgence. He does not think he has ever suffered from any venereal disease. His family history, so far as he knows, is good.

On February 21, 1898, he was in a saloon at Victor, Colorado, had an altercation with a man who pulled a gun on him, held it near his chin and fired. Every muscle seemed to relax, he fell to the ground, did not lose consciousness, but was un-

able to rise and his friends carried him home.

After having been placed in bed he complained of a numb sensation in entire left side from shoulder downward, and found that he was unable to move the left arm or leg. He was able to move the limbs on the right side. A bullet wound was found in the front of his neck just to the left of the median line. There was no wound of exit for the bullet. The wound in the neck was dressed. He was taken to Denver late on the evening of the 22nd, and placed in St. Luke's Hospital. At 11.30 A.M., of February 23, or about forty hours after the wound had been inflicted, I saw him in consultation with Dr. Rogers.

Examination.—He is perfectly conscious and able to answer questions. He gives a detailed and connected account of the altercation, the shooting, his feelings immediately after the wound was inflicted and during the time that has intervened since the injury. His statements in regard to his subjective sensations, and his answers to my questions during a prolonged examination, lasting about one and a half hours, appear reliable and correct.

He is a large, muscular man, weighing about 200 pounds. His appearance shows the results of alcohol and other dissipation. He complains of shortness of breath, weakness, and pain in the right upper arm. The left leg and arm are completely paralyzed. He can move the right leg and arm. The left leg and arm feel numb, as if they were "asleep." This sensation is most marked in the hand. All the deep reflexes are normal in right leg, but absent in left. Plantar reflexes: R., present; L., absent. Cremaster reflex: R., present; L., absent. Abdominal reflexes absent. Deep reflexes of arms: R., present; L., nearly absent. Dyn. R., 62; L., o. The face and tongue are unaffected. The neck muscles are not tested on account of the patient's weak condition and shortness of breath.

Tactile sense is lessened but not abolished on the left shoulder and over the left upper arm nearly to the elbow and to a very slight extent over the right hand and wrist. Throughout

the trunk and other portions of the limbs, tactile sense appears to be unaffected.

Pain sensation is absent throughout right side from first intercostal space downward. It is absent also in the right arm from about the elbow downward in front and over the posterior surface of the entire arm. It is absent over the left shoulder and upper arm front and back downward nearly to the elbow. Over all other portions of the body pain sensation appears to be normal.

Temperature sensation throughout the areas in which pain sensation is lost, cold and warm substances are spoken of as warm. He is unable to distinguish between hot and cold or cool and warm substances in any portion of the analgesic areas. While the sensation of heat caused either by warm or cold substances cannot be said to be lost, yet the power to distinguish between substances of different temperatures is completely lost. Except in the areas above mentioned, temperature sensation does not vary from the normal.

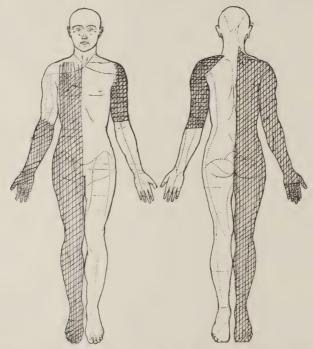
Posture or muscular sensation seems normal in right leg and arm, but apparently lost in left leg and arm. Joint sensation seems perfect. Pressure sensation is imperfect in the tactile anesthetic areas, otherwise it is normal. Taste, smell and hearing seem normal. Vision, fields, disks, and fundi present no evidence of lesion. There is slight ptosis of the left upper eyelid. The right pupil is twice the size of the left; the latter is apparently normal in size. Both pupils respond to light, shade and accommodation, but the right is less active than the left. The patient was not aware that any difference in the size of the pupils had existed prior to the injury.

Diagnosis as to the Character, Extent and Location of the Cord Lesion.—It was of considerable importance to solve these problems, if possible, before attempting to operate. The wound had been carefully dressed by Dr. Rogers before I saw the man. I was informed that a 38-caliber bullet had penetrated the anterior portion of the neck nearly in the median line and apparently passed nearly directly backward. I did not see the wound until fifty-three hours later.

The results of the examination showed that only the left side of the cord had been injured and that the destruction of this side was not complete was evident from the fact that most of the fibers of tactile sense seemed to be intact. That the pyramidal fibers had been completely cut across was evidenced from the fact that all reflexes, both deep and superficial, were absolutely abolished on the left side of the trunk and in the left leg, and were scarcely perceptible in the left arm, forty hours after the injury had been received, although the corresponding reflexes on the right side, except the abdominal, were present and slight-

ly increased. The fibers for muscular, pain and temperature sensations had also been cut across at the seat of the injury on the left side.

The questions were debated: Was the cord injury due directly to the bullet passing through the cord and membranes, or to a spicula of bone having been driven through the membranes into the cord by the force of the bullet? That a fatal hemorrhage had not occurred led me to believe that the bullet had not plowed its way through the membranes and cord. That the injury to the left side of the cord was not due to the



Figs. I and 2—Horizontal lines indicate loss of tactile sense. Vertical lines indicate loss of pain sense. Oblique lines indicate loss of temperature sense.

presence of the bullet in the spinal canal and its pressure upon the cord seemed certain from the fact that the pyramidal tract had been completely cut across, as shown by the absence of the reflexes on the left side. It seemed to me most likely that the cord had been injured by some sharp cutting substance, probably a spicula of bone. If I were correct the probability was that the spicula of bone was partially or completely imbedded in the substance of the cord. Accordingly an operation was recommended.

The injury did not involve the whole of one lateral half of the cord, else the fibers of tactile sense would have been destroyed and we would have had tactile anesthesia on the right side. It must be remembered that tactile sense was not lost in any portion of the body or limbs, but was lessened in portions marked by horizontal lines in Figs. I and II.

As near as could be determined, the lesion was located in the

sixth or seventh cervical segment of the cord.

The bullet had not been recovered, but where was it? Probably lodged among the spinous processes of one of the cervical vertebræ. If this were the case an operation for its removal at that time might endanger the man's life from hemorrhage, especially in his prostrated condition from shock, shortness of breath and refusal to take a sufficient quantity of food. On the other hand, if the injury to the cord were due to the presence of a spicula of bone in it, the sooner the offending substance was removed, the better.

The patient has to be catheterized. His temperature in each axilla is 99.2° F.; pulse 110; respirations 20 when he is quiet, but the latter increases considerably on the slightest exertion. He is restless, feels miserable and it is with great difficulty that we can get him to take sufficient liquid nourishment. The heart is free from murmur, the kidneys are acting well and the urine shows neither albumin nor sugar. The extreme restlessness and the poor quality of the pulse made it desirable to avoid a serious operation at the time, if possible. It was decided to nourish the man as much as possible and to stimulate him, to see if we could get him in a better condition for an operation.

February 24—He shows some apparent improvement; the temperature is normal, the pulse 80, quality a little better, res-

piration 20.

February 25—It is evident that the improvement is only temporary; the temperature begins to rise 99° F. at noon; the pulse and respiration, while not increased in frequency, are not as good as they were the day before. The patient is becoming apathetic. The serious nature of his condition is explained to him. He is told that an operation may do good, but that the chances are against him. He decides that his physicians are the best judges and leaves the matter of operating to them.

OPERATION AND REMARKS.

BY DR. ROGERS.

Operation at 4.15 P.M., on February 25. A 38-caliber bullet is extracted from beneath the skin on the posterior portion of the neck, about one inch to the left of the median line. It is found by passing the finger in the track made by the bullet posterior to the spinal column that the sinus leads from the

transverse process of what is apparently the fifth cervical vertebra. The conical end of the bullet is found to be flattened, its sides scarred, a piece of the metal clipped off, and left as was supposed in contact with the bone. On enlarging the sinus made by the bullet in its track through the bones of the spinal column, it is ascertained that the bullet emerged from the bone through the fossa between the fourth and fifth cervical transverse processes. The lamina of the fifth cervical vertebra is quite loose on the left side and broken into many pieces. The bullet had entered the spinal canal through the body of the fifth cervical vertebra. A piece of bone 3% of an inch in diameter is found within the spinal canal and lying external to the membranes. Two smaller pieces of bone, one round, 3-16 of an inch in diameter, the other a thin spicula, about 1/8 of an inch in diameter, had been driven through the membranes and into the lateral substance of the cord. These pieces of bone are removed. The bleeding is quite free. The bullet had not torn the membranes and so far as we were able to determine, it had not directly injured the cord. The cord was apparently damaged solely by the small pieces of bone that had been driven into its substance. There is not much bleeding within the membranes.

The patient is returned to the surgical ward at 5.30 P.M. During the night his temperature did not fall below 98° F., nor rise above 98.2° F. The pulse immediately after the operation was 110, rose to 116 by 7.30 P.M., but was 96 at 5 the next morning. Respirations continued about the same as before the operation, 24 per minute. It was evident that the operation

caused no perceptible shock or apparent depression.

By 10 Å.M., of the 26th, T. 101.4° F.; P. 108; R. 30. From this time on the decline was progressive and comparatively rapid. At 12 M., T. 102° F.; P. 132; R. 32. At 6 P.M., T. 102.2° F.; P. 140; R. 39. During the night the pulse ranged from 140 to 150, respirations from 36 to 40 and the temperature at 6 A.M. of the 27th was 103.6° F. At this time he had become comatose. He died at 12.30 P.M. on the 28th. His temperature

did not go above 103.4° F.

Autopsy on the body of Mr. Thomas E. W. was made at 4.30 P.M. of February 28, 1898, four hours after death. The body is still warm; post-mortem rigidity is just beginning in jaw, chest and limb muscles. Only the parts at the site of the injury and surgical operation were examined. No pus and very little blood was found. The cervical portion of the cord was greatly softened. This softening, inflammatory in character, had begun to involve the medulla. On sectioning the cord into blocks the edges at the end of each section everted, especially was this well marked opposite the seat of injury to the cord. The substance of the cord at this point seemed to have undergone softening throughout its entire transverse extent.

The wound of the cord inflicted by the spiculæ of bone was in the left lateral aspect of the cord and did not appear to penetrate more than one-half the distance from the surface to the central canal of the cord. The wound involved directly only the extreme outer portion of the gray matter. The wound was wedge-shaped, with its base at the surface of the cord. The spiculæ of bone had not penetrated the anterior and posterior portions of the left lateral half of the cord, neither had the central gray matter of this half of the cord been reached by the spiculæ.

The cervical and upper costal portions of the cord and the medulla were placed in Müller's fluid and allowed to harden slowly for three months. The fluid was poured off and renewed every few days during the first two weeks. Before the cord was subjected to microscopic examination it was placed in a 2

per cent. solution of formaldehyde for a few days.

The microscopical examination was made by the late Dr. E. R. Axtell. Over 100 sections from the medulla, cervical and costal portions of the cord were carefully cut and examined. The sections showed softening throughout the cervical region of the cord. The softening was slight in the right lateral half of the cord, but in the left, especially in the region of the injury inflicted by the bone, it was very well marked and attended by hemorrhagic extravasation. The microscopic sections developed the fact that the spiculæ of bone had not penetrated the left lateral half of the cord to more than one-third the distance to the central gray matter immediately surrounding the central canal of the cord. The anterior and posterior portions of the left half of the cord had not been injured by the bone. The left side of the cord immediately in the vicinity of the lesion in the cord made by the pieces of bone, showed a degree of softening further advanced than the parts more remote from the site of the injury.

Case II.—Wm. R. D., act. nineteen years, white, male, born in Texas, by occupation laborer in a cotton mill, was admitted into the surgical ward of the Arapahoe County Hospital, March 6, 1898, about 7 P.M. The family history was negative. The boy was tall (height 6 ft. 2 in.), lean and lanky. He was not otherwise well developed. His personal history was uninteresting.

On March 6, 1898, he was accidentally shot by a companion who stood some fifteen or twenty yards behind him. A 22-caliber, short conical bullet, coming from a Colt rifle, struck him in the left posterior portion of the neck. He immediately fell to the ground, but consciousness was undisturbed, and he was able to describe subsequently all the sensations that he experienced at the time. His companions found that he was paralyzed in

the left leg and to a partial extent in the left arm. Immediately after the receipt of the injury the boy experienced a numb sensation in the right leg and arm, and great pain in both arms and legs. The pain was more severe in the limbs on the left side than in those on the right:

I saw the patient at 9 P.M., five hours after the accident, in consultation with Drs. Rogers and Howell T. Pershing, the former one of the surgeons and the latter the neurologist, to the hospital. I wish in this connection to acknowledge my indebtedness and express my thanks to Drs. Pershing and Rogers for the privilege of studying the case over a prolonged period and for permission to use my notes of it in connection with Case

I, just reported in this paper.

The first neurological examination was made conjointly by Dr. Pershing and myself. All the muscles of the left leg are very weak, yet by an effort of the will almost all movements can be effected, although very feebly. Complete paralysis of the left wrist and fingers exists. He cannot extend the left arm at the elbow, but can feebly flex it at this joint. None of the shoulder movements are entirely lost, but are all very weak. All muscles of the right leg, arm, sides of the neck, face and tongue are normal in strength. Dyn. R. 130; L. o. There is no ptosis of the upper eyelids and the pupils are equal in size and respond readily to light, shade and accommodation. Deep reflexes of legs and arms are slightly increased on right side and decidedly increased on the left. Plantar and cremaster reflexes: R. normal: L. greatly diminished. Abdominal: R. present; L. absent.

Sensory phenomena: Tactile sense is partially lost on the entire left hand, on the anterior surface of forearm for a distance of two inches above the wrist joint, on the posterior surface of forearm to a point three inches above the wrist joint, and on the posterior and extreme inner surface of the forearm and arm nearly to the axilla. (See Fig. IV.) Over all other

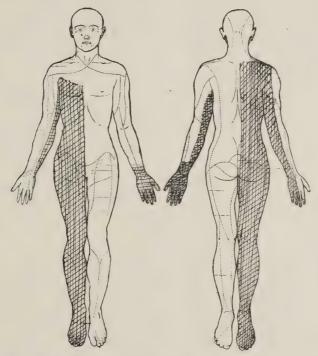
portions of the body and limbs tactile sense is normal.

Pain sensation is lost in the entire right leg, on the right side of the trunk anteriorly to the third intercostal space and posteriorly to the seventh cervical spine; in the right arm and hand anteriorly there is only a slight disturbance on the extreme inner margin, posteriorly on the hand and arm to the shoulder on the inner one-half of the surface; over left hand and arm anteriorly, there is apparently no disturbance to pain sensation, but posteriorly marked loss in the tactile anesthetic area.

Temperature sensation is perverted or lost in the areas in which pain sensation is affected. (See Figs. III and IV.)

Muscular sense is absent in left leg and hand. Pressure sense absent in area of tactile anesthesia. Joint sense is absent in left fingers and wrist.

Ten days after Dr. Rogers and I had studied Case I, we encountered Case II, almost a counterpart, so far as neurological symptoms were concerned, of Case I, except that in Case II, the lesion was a little lower in the vertical level of the cord, and the deep reflexes were preserved on the left side and slightly increased. It will be remembered that loss of pain and temperature sensations began opposite the first intercostal space in Case I, and opposite the third intercostal space in Case II. In Case I all the reflexes, deep and superficial, were abolished on the left



Figs. 3 and 4—Horizontal lines indicate tactile anesthesia. Vertical lines indicate analgesia. Oblique lines indicate loss of temperature sensation.

side from the level of the lesion in the cord downward, just the opposite of what we have just stated occurred in Case II.

Having so recently met with Case I, studied the clinical phenomena and examined the lesion in the cord at the post-mortem examination, I felt justified in making a diagnosis of pressure on the left lateral half of the cord opposite the second or third costal segment. In the light of my recent experience with Case I, Dr. Pershing readily agreed with me in the main fea-

tures of the neurological diagnosis. It seemed to both of us a most favorable case for immediate surgical interference, and the patient agreeing, Dr. Rogers at once proceeded to operate.

OPERATION AND REMARKS.

BY DR. ROGERS.

The wound in the skin, indicating the point at which the bullet had entered the neck, was small and situated a little to the left of the median line and at a point nearly opposite or a little below the spinous process of the seventh cervical spine. On following the track of the bullet from its point of entrance posteriorly, the bullet and a small spicula of bone are found within the spinal canal, external to the membranes, but in such a position as to allow them to exert pressure on the left lateral half of the cord at a point opposite its upper costal region, or it may be opposite the junction of the cervical and costal regions. It is impossible to determine upon which segments of the cord the bullet presses. The spinal membranes had not been injured by the bullet or spicula of bone. There is very little hemorrhage in the spinal canal. Only a small quantity of blood is lost during the operation.

The wound healed satisfactorily and surgical recovery was rapid and uninterrupted, the temperature at no time rising more than one or two degrees above normal. The pulse and

respiration were only slightly affected.

SUBSEQUENT NOTES BY DR. ESKRIDGE.

On March 12, six days after the receipt of the injury and the surgical operation, the sensory phenomena remained about the same as they had been before the operation, but the boy seemed greatly depressed. The temperature and respiration are nearly normal, but the pulse is weak and 100 per minute. The appetite is poor, the patient restless. It is difficult to get him to make any muscular movements. Both knee-jerks are absent. The other deep reflexes are lessened and all the superficial reflexes are absent. The right pupil is nearly twice as large as the left.

March 16, 1898. Right leg is strong in all movements. Left foot in almost complete plantar flexion, but he is able by voluntary effort to increase the plantar flexion of left foot. Dorsal flexion of the left foot completely lost. There is slight power of movement at left hip and knee. Dyn. R. 30; L. o. Right elbow and shoulder movements about one-half normal strength. Unable to flex fingers of left hand, can extend left hand at wrist. He can flex left arm at elbow, but cannot extend it. Shoulder movements lost. Intercostal muscles of

left side paralyzed. The major pectoral muscle on each side acts well.

Knee-jerks, R. normal; L. lessened. Plantar; R. slight, L. absent. Tendo Achillis, R. slight; L. absent. Cremaster and abdominal reflexes present. Deep reflexes of arms increased, the left to a greater degree than the right. The strength of the muscles about neck and shoulder, for the most part, cannot be

tested on account of the presence of the dressings.

Sensory phenomena. Tactile sense throughout the entire right side to a camel-hair pencil held in contact with the parts is present, and also throughout left side, except over a small area on lower posterior inner one-half of upper arm, one inch in width and four inches long; over another area on forearm extending from elbow to wrist joint, one inch in width and lying on the extreme posterior ulnar of arm; also over entire left hand, palmar and dorsal surfaces and for about three inches above the wrist both anteriorly and posteriorly.

Temperature and pain sensations absent on right side from the third intercostal space downward, also over areas of tactile anesthesia and dulled over portions of right forearm. Posture sense absent in left arm and leg. Joint sense absent in left wrist and finger joints; present throughout right side. Examination of the organs of special sense reveals nothing abnormal except that the right pupil remains about twice as large as the

left. Both responsive, left more readily than the right.

March 19. Slight improvement.

March 24. All movements of left leg, including foot and ankle have returned, but they are weak. No improvement in left arm movements, except that he can rotate the left forearm slightly. A few days later he could flex and extend hand at

wrist. All forms of sensation remain about the same.

April 8. Tactile sense is restored on left wrist and hand down to the metacarpo-phalangeal joints, except on radial side of hand over which loss of tactile sense still remains sufficient to be detected by a camel-hair pencil in motion. Thermo-anesthesia is lessening on right arm and foot, that on the leg and body remain nearly the same as at first. Loss of pain sensation is not lessened but has extended a little on posterior surface of right arm. Ankle-clonus is recognized on the right side for the first time today. Deep reflexes exaggerated. Muscular sense still absent in left arm and leg.

He gradually improved, and by May I, was able to walk with the assistance of a cane. When he first began to try to walk it was extremely difficult for him to do so on account of the loss of muscular sense in the left leg. He had almost completely recovered by July I, except that muscular sense in the left leg. and arm is still defective. He left

the hospital early in August. At that time he was feeling quite well, muscular sense was lessened in left arm and very decidedly defective in left leg, requiring him to use his eyes in walking. He had not entirely recovered his normal power of motion in the left leg and arm. Pain and temperature sensations were less acute on the right side than on the left. Tactile sense seemed perfect everywhere. I saw him one or two months later and his recovery was apparently complete, with the single exception that muscular sense was still defective in left leg, but much less than when he left the hospital. In the fall of 1898 he went to Nebraska and resumed his work in a cotton mill. I have not been able to obtain any word from him since he left Colorado, although I have written two or three times.

It is almost enough to make one weep to be apparently so near the solution of interesting problems, determining the function of the direct cerebellar tracts and the position in the cord of the fibers for pain, temperature and muscular sensations, and utterly to fail.

The spiculæ of bone had apparently completely cut across the left direct cerebellar and the crossed pyramidal tracts and the posterior portions of the antero-lateral ascending tract and the anterior ground fibers. Had the lesion extended no further than that directly inflicted by the spiculæ of bone, and had the patient survived a few weeks after the injury, a careful study of Case I would in all probability have resulted in brilliant results. The early death of the patient, the extensive inflammatory softening and the hemorrhagic infiltration blasted my hopes. My experience seems, in this direction, to be but a repetion of that of all neurologists who have had an opportunity to study similar cases. Sir William R. Gowers in 1878 recorded a case in many respects, so far as the lesion is concerned, almost a complement to Case I, detailed in this paper. In this hemorrhage and hemorrhagic extravasation took place².

There are, however, several points of interest suggested by the report of the two cases included in this paper, and seem to me worthy of discussion by the members of this Association. The ciliospinal center was affected in both cases. In each, it will be remembered, the injury was to the left side of the cord. In Case I, I quote from notes, made at the bedside of the pa-

²⁰Diseases of the Nervous System," Vol. I. Third Edition, 1899, p. 235. Blakiston Son & Co., Philadelphia.

tient, "There is slight ptosis of the left upper eyelid. The right pupil is twice the size of the left; the latter is apparently normal in size. Both pupils respond to light, shade and accommodation, but the right is less active than the left. The patient is not aware that any difference in the size of the pupils existed prior to the injury." It may be well for me to remind you in this connection that the injury to the cord in Case I was to the sixth and seventh cervical segments. In Case II, the bullet lay in the spinal canal, external to the dura, in such a position as to exert pressure on the second and third costal segments. In this case there was neither ptosis of the upper evelid nor affection of either pupil a few hours after the receipt of the injury; and dilatation of the right pupil was not observed until six days after the receipt of the injury, although the boy was visited by me daily and observed closely. By this time edema of the cord had probably taken place and involved the first costal segment. On March 16, the right pupil remained about twice the size of the left. On March 19, both pupils were equal and remained so until the patient passed from under my observation, several months later.

I was unable to satisfy myself that the palpebral fissures varied from the normal either in Case I or II.

The results obtained by a careful study of the two cases reported in this paper suggest that there may be fibers in the cervical region of the spinal cord that aid in elevating the upper lid of the eye of the same side, and in modifying the size of the pupil of the opposite side. I know that these results are directly opposite to what has been found by experimentation, but are not the conditions different? In experimentation the nerve roots have been irritated or sectioned. In most cases of disease of the cervical or extreme upper costal regions of the spinal cord attended by pupillary changes the nerve roots have been affected, besides there have been, in most instances, vasomotor disturbances. In neither case reported in this paper were there any vasomotor changes on either side. In Case II, the irritation apparently never extended to the nerve roots. In Case I there was no evidence that it had at the time of the examination, such as would have been shown by vasomotor disturbance.

Irritation of the nerve roots of the cervico-brachial plexus,

certainly of the lower portion will give rise to dilatation of the pupil and widening of the palpebral fissure of the same side. Seguin observed myosis after section of these roots.

At first I thought my observations were at fault. I went over them repeatedly and the results were always the same. In Case I, the left pupil was normal in size and responded readily to light, shade and accommodation. The right was twice the size of the left and reacted slowly and imperfectly to all tests. In Case II, the pupils at first were equal and normal in size and both reacted perfectly. Six days later the right pupil was twice the size of the left and like the right pupil in Case I, reacted tardily and imperfectly. This condition continued for a period of seven days. At the expiration of this time the right pupil was as small as the left had been from the first and responded readily and perfectly to all tests. After all, we should expect the fibers for the ciliospinal center to cross in the medulla, but so far I have been unable to find any recorded cases that seem to confirm this. Kocher believes that the ciliospinal center extends from the medulla to the first costal segment.

One of the most curious conditions in Case I, was the ptosis of the upper eyelid on the side of injury to the cord. The patient said he had, so far as he was aware, no venereal disease and he was not a man likely to deny syphilitic infection had he suffered from it. I was unable to find any other symptom pointing to syphilis. His physician had never observed anything wrong with the man's eyes prior to the injury from the bullet.

It is interesting to note in connection with Case I, that all reflexes were abolished from the level of the cord injury downward on the side of the lesion, and on the side of the body on which the only form of sensation abolished or disturbed was muscular sensation. This not only supports Bastian's theory that a complete severance of the cord in any portion abolishes all reflexes below the point of lesion, but that so far as the cord is concerned the presence of the reflexes is dependent upon the motor and muscular sensation fibers and their associated neurones, axons and dendrons.

That some of the fibers of muscular sensation run in the posterior median columns seems certain from a study of the symptoms and pathology of tabes. In Case I, these columns

were not affected by the lesion, yet loss of muscular sensation was complete on the side of the injury. The inference naturally is, that all the fibers of muscular sensation do not run in the posterior median columns. In this connection a quotation from Gowers is interesting. "The function of the direct cerebellar tract has still to be demonstrated. There are certain resemblances between its fiber-relations and those of the posterior median columns which gives countenance to Flechsig's theory that it conveys impressions from the muscles of the lower part of the trunk and between the trunk and the lower limbs. But the origin of its fibers from the cells of the posterior vesicular column, and the mystery attaching to the latter, give additional obscurity to this structure. The fine nerve-plexus between the cells seems connected with the fibers of the posterior roots, and this plexus is said to atrophy early in locomotor ataxy. The obscurity will, indeed, be dispelled if we can accept the speculation of Sherrington that this cylinder is really part of the series of ganglia on the posterior nerve-roots, which occupies a position within the spinal cord, and is continuous instead of broken into ganglia3."

Unfortunately a study of Cases I and II gives us no clue to the exact positions in the cord occupied by the fibers for pain and temperature sensations and tactile sense further than to emphasize the fact already known that the fibers for pain and temperature sensations lie near together in the cord and are not immediately joined by the fibers for tactile sense.

Pressure sensation is closely related to tactile sense and is probably a part of it. In the cases reported in this paper pressure sensation was only involved in the areas in which tactile sense was affected. The power of localization seemed to be preserved except in these areas.

What is joint sensation? With what form of sensation is it associated? Is it a part of tactile sense? In the above cases it was preserved, as nearly as I could determine, except in the joints over which the skin was completely or partially anesthetic.

The interesting character of the cases that I have just reported and the care with which I have tried to study them, constitute my only excuse for the length of my paper.

³loc. cit., p. 237.

A STUDY OF SENSATIONS IN MOTOR PARALYSIS OF CERE-BRAL ORIGIN BASED UPON THIRTY-FIVE CASES.*

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The question concerning the relationship of motor and sensory localizations is still unsettled, notwithstanding the considerable number of data accumulated in the literature. The doctrine of the sensori-motor area as one localization, as well as the doctrine of localizations separate for motor and sensory functions, is ardently defended by equally prominent authorities on either side. The subject as it stands now, although far from being solved, is nevertheless so far advanced that conclusions regarding one of the two functions cannot be drawn, unless a study of the other is made at the same time.

Disturbed functions, motor and sensory, of cerebral origin, may be due to cortical, subcortical, capsular, peduncular, or pontine lesions. The problem of localizations is therefore vast; its solution is as yet surrounded with a mystery.

The author of the present contribution attempted to approach one portion of this difficult problem, and while he does not pretend to solve the question in its entirety for want of pathological material, at least basing himself upon facts demonstrates with evidence, the clinical aspect of one of the views held by one of the two schools.

The study of the subject was undertaken by the writer without any preconceived idea, and without the slightest inclination towards one or the other view held by authorities in this country or abroad. His aim was to determine in the most impartial manner the condition of sensations in motor paralysis of cerebral origin.

The thirty-five cases were examined with the utmost care: selection was made of cases with perfect, or good mental lucidity, so that the question put to them be correctly answered. Cases of doubtful nature were not taken in the series. Also were excluded

^{*}Read before the Philadelphia Neurological Society, October 28, 1902.

those cases which in addition to the motor cerebral symptoms presented symptoms of spinal diseases or of local affections.

Each case was examined repeatedly on the same and the following day. Considerable time was spent in repeated attempts to mislead the patient in order to verify the answers; the results were uniform. Finally a reëxamination of all the cases was made a month later and to my great surprise the data collected proved to be exactly the same as at the first examination.

One word more about my method: Every case was examined in regard to hysteria, and in order to attribute the sensory disturbances to their real cause, all cases with hysterical stigmata, except one, were excluded.

SUMMARY OF THIRTY-FIVE CASES OF HEMIPLEGIA STUDIED FOR DISTURBANCES OF SENSATION AT THE PHILADELPHIA HOSPITAL AND JEFFERSON

COLLEGE HOSPITAL.

Case I, No. 12. Infirmary. John Veasey, aged seventy-six. Complete right hemiplegia of one and a half years' duration. Movement in leg better than in arm.

Sensations: Upper limb-Touch anesthesia, which disappears at the root of the limb; pain, analgesia from fingers to elbow; to heat anesthesia, to cold anesthesia from fingers to elbow, above, hypesthesia.

Trunk—Touch normal, pain hypalgesia, to heat hypesthesia, to cold

hypesthesia.

Lower limb-Touch anesthesia; pain, hyperesthesia from toes to knee, above hypesthesia; to heat hypesthesia, to cold hypesthesia.

Face—Touch normal, pain analgesia, to heat hypesthesia, to cold hypesthesia.

Astereognosis is complete. Position of upper limb is normal, special

senses are normal, no paresthesia.

Case II, No. 5. Infirmary. Joseph Laselle, seventy-three years old. Complete right hemiplegia a year ago. Arm in contracture. Some move-

ments in the leg.

Sensations: Upper extremity—touch anesthesia, pain hypalgesia on all aspects of the limb. From the fingers up hypalgesia becomes less marked towards the root of the limb where pain is normal. Heat not felt at all, to cold hyperesthesia.

Trunk—Touch anesthesia, pain hypalgesia. To heat normal, to cold

hyperesthesia.

Lower extremity—Touch anesthesia, pain hypalgesia. To heat anesthe-

sia, to cold hyperesthesia.

Face—Touch normal, pain analgesia. To heat normal, to cold hyperesthesia.

Astereognosis is complete. Position of paralyzed arm: patient cannot find the paralyzed limb. Special senses: hearing impaired on the right side. Paresthesia present.

Case III, No. 10. Infirmary. Gottlieb Schneider, sixty years of age, shoemaker. Complete left hemiplegia of seven years' duration. Some movements present, more in arm than in leg.

Sensation: Upper limb—Touch normal, pain hypalgesia (slight); pain becomes normal at the root of the limb. Heat taken for cold, to cold

Lower limb-Touch normal, pain hyperalgesia, heat taken for cold, to cold normal.

Patient states that he was totally anesthetic to all sensations for a long time, but they gradually returned when motion improved.

Trunk—Touch normal, pain hypalgesia, to heat hypesthesia, to cold

hyperesthesia.

Face—Pain, touch and temperature normal.

Astereognosis for small objects is present. Position of paralyzed limbs can be determined with the normal limbs. Special senses are normal, no paresthesia.

Case IV, No. 17. Infirmary. Frank Morbock, aged fifty-three years, laborer. Complete right hemiplegia with some impairment of speech of six months' duration. Motion is better in the lower than in upper limb.

Sensations: Upper limb-Touch normal, pain hypalgesia (this is equal at the end and root of the limb); to heat hypesthesia (becomes normal at the root of the limb), to cold hypesthesia.

Trunk-Touch normal, pain normal, to heat hypesthesia, to cold nor-

mal.

Face—Pain, touch and temperature normal.

Astereognosis is present for small objects; cannot recognize size and material of an object. Position of arm is not easily recognized with the

normal limb. No paresthesia. Special senses normal.

Case V, No. 30. Infirmary. Michael Mooney, about seventy-five years of age, plasterer. Complete right hemiplegia of one year's duration. Some movement in the arm, but none in leg.

Sensations: Upper limb—Touch hypesthesia (slight), pain hypalgesia

(slight), to heat hypesthesia, to cold hypesthesia (slight).

Trunk—Touch hypesthesia, pain normal, to heat hypesthesia, to cold normal.

Lower limb—Touch hypesthesia and delay, pain hypalgesia, to heat anesthesia, to cold hypesthesia from toes to knee, above, normal.

Face—Touch normal, pain hypalgesia, to heat hypesthesia, to cold normal.

Astereognosis absent. Paresthesia absent. Special senses: Hearing is

equally impaired on both sides. Left pupil is larger than right.

Case VI, No. 15. Infirmary. Herman Schmidt, aged sixty years, machinist. Complete left hemiplegia of eleven months' duration. Arm and leg almost entirely without movements.

Sensations: Upper limb-Touch hypesthesia, pain, delay from fingers to wrist; above, analgesia. To heat anesthesia, to cold anesthesia.

Trunk-Touch normal, pain analgesia in some areas, hypalgesia in others. To heat anesthesia, to cold hypesthesia.

Lower limb-Touch normal, pain hypalgesia and delay, to heat anes-

thesia, to cold hypesthesia.

Face—Touch hypesthesia and delay, pain normal, heat taken for cold, to cold normal.

Astereognosis is present for every form. Paresthesia present (cramplike sensation and numbness). Special senses: Hearing lost on paralyzed side, left pupil sluggish to light.

Case VII, No. 31. Infirmary. John Edwards, aged fifty-nine years, sailor. Complete right hemiplegia of four months' duration. Movement is present to some extent in arm and leg.

Sensations: Upper limb—Touch normal, pain hypo (slight), to heat normal, cold taken for heat.

Trunk—Touch normal, pain and temperature normal.

Lower limb—Touch normal, pain normal; to heat delay on foot, above normal; cold taken for heat from ankle up, normal on foot.

Face—Touch normal, pain and temperature normal.

Astereognosis absent. Position of paralyzed arm cannot be found with the normal limb. Special senses normal. Paresthesia absent. Hospital record shows analgesia and astereognosis. Patient says sensation improved when movement improved.

Case VIII, No. 29. Infirmary. Charles Bratton, aged sixty years, laborer. Complete right hemiplegia of a few days' duration. Movements

improved, arm in better condition than leg.

Sensations: Upper limb—Touch normal, pain normal, to heat normal, to cold normal.

Trunk—Touch normal, pain normal and temperature normal.

Leg-Touch normal, pain hypalgesia, to heat hypoesthesia, to cold normal.

Face—Touch normal, pain hypalgesia, to heat normal, to cold normal. Astereognosis absent. Position of paralyzed limbs recognized. Spe-

cial senses normal. No paresthesia.

Case IX, No. 22. Infirmary. John McAnally, aged seventy years, laborer. Complete right hemiplegia of seven years' duration. (Leg only Movements improved. Speech impaired. slightly involved.)

Sensations: Upper limb—Touch normal, pain normal.

Thorax, lower limb and face normal to touch, pain and temperature. Position of paralyzed arm could not be determined. Astereognosis absent. Special senses normal. No paresthesia.

Case X, No. 32. Infirmary. Adolph Schultz, aged thirty-eight years, laborer. Complete left hemiplegia of five months' duration. Movements are better in leg than in arm.

Sensations: Upper limb—Touch hypesthesia (slight), pain hypalgesia

(slight), to heat and cold normal.

Trunk—Touch normal, pain hypalgesia, to heat and cold normal. Lower limb—Touch normal, pain hypalgesia, temperature normal.

Face—Touch and pain normal, temperature normal.

Astereognosis absent. Position of paralyzed limbs not easily recog-

nized. Special senses normal. No paresthesia. Case XI, No. 2. Women's Ward. Jane Blair, aged eighty-two years. Complete right hemiplegia of three and one half years' duration. Movements in leg much better than in arm.

Sensations: Upper limb-Touch normal, pain hypalgesia on posterior aspect, normal on anterior; to heat hypesthesia on arm and forearm, nor-

mal on hand, to cold normal.

Trunk—Touch hypesthesia, pain normal, to heat and cold normal. Lower limb—Touch normal, pain normal and temperature normal. Face—Touch and pain normal, to heat normal, to cold hypesthesia. Astereognosis is present only for consistency of objects. Special senses normal. No paresthesia.

Case XII, No. 4. Women's Ward. Mary Doyle, aged fifty-two years. Left hemiplegia (except face) of one year's duration. Movements much

improved in leg, in arm no movements. Sensations: Upper limb—Touch and pain normal; heat taken for cold from elbow up, normal below, except a few areas of hypesthesia, to cold normal.

Trunk—Touch normal, pain hypalgesia, heat taken for cold, to cold nor-

Lower limb-Touch normal, pain hypalgesia, to heat normal, to cold normal.

Astereognosis present only for size of small objects. Position easily recognized.

Case XIII, No. 24. Women's Ward. Annie Moore, aged forty-eight years. Complete left hemiplegia of four years' duration. Movements better in leg than in arm.

Sensations: Upper limb—Touch normal, pain hypalgesia and delay, to

heat hypesthesia (marked), to cold almost anesthesia.

Trunk-Touch hypesthesia, pain hypalgesia, heat taken for cold, cold taken for heat.

Lower limb—Touch hypesthesia, pain hypalgesia, to heat normal, to

cold hypesthesia.

Face—Touch hypesthesia, pain hypalgesia, to heat normal, to cold hypesthesia.

Astereognosis very marked for consistency, shape and size of objects. Position cannot be recognized. No paresthesia. Special senses normal. Case XIV, No. 26. Women's Ward. Alice Facett, aged forty-nine years. Complete right hemiplegia, impairment of speech. Movements are present somewhat in leg, none in arm.

Sensations: Upper limb-Touch hypesthesia, pain analgesia, to heat

hypesthesia (marked), to cold hypesthesia (marked).

Trunk—Touch anesthesia, pain analgesia, to heat normal, to cold hypesthesia.

Lower limb—Touch hypesthesia, pain analgesia (almost), to heat and cold anesthesia.

Face—Touch anesthesia, pain analgesia, to heat and cold hypesthesia. Astereognosis is present. Position impossible to determine. No pares-

thesia. Special senses normal. Case XV, No. 19. Women's Ward. Mary Ford, aged seventy-two

years. Complete left hemiplegia of five months' duration. Movements improved considerably; more power in leg than in arm.

Sensations: Upper limb—Touch hypesthesia, pain hypalgesia, to heat and cold hypesthesia.

Trunk—Touch normal, pain hypalgesia, to heat normal, to cold hypesthesia.

Lower limb—Touch normal, pain normal, to heat and cold hypesthesia. Face—Touch normal, pain hypalgesia, to heat normal, to cold hypes-

Astereognosis present. Position is not easily recognized. Special

senses are normal. No paresthesia.

Case XVI. No. 18. Women's Ward. Rachel Brandon, aged forty years. Complete left hemiplegia of four years' duration. Movements improved more in leg than in arm.

Sensations: Upper limb—Touch hypesthesia, pain hypalgesia, to heat

and cold hypesthesia.

Trunk—Touch hypesthesia, pain hypalgesia, to heat and cold hypesthesia (slight).

Lower limb—Touch and pain hypesthesia, to heat and cold hypesthesia (slight).

Face—Touch, temperature and pain hypesthesia (slight).

Astereognosis present. Position can easily be recognized. No pares-

thesia. Special senses normal.

Case XVII, No. 14. Women's Ward. Theresa Gallaguer, aged sixtyeight years. Complete right hemiplegia of one year's duration. Movements improved much in leg, but very little in upper limb.

Sensations: Upper limb—Touch hypesthesia, pain hypalgesia, to heat

and cold hypesthesia.

Trunk—Touch hypesthesia, pain hypalgesia, to heat and cold hypesthesia (slight).

Lower limb-Touch normal, pain hypalgesia from foot up to knee, above normal; to heat and cold hypesthesia from foot to knee, above nor-

Face—Touch normal, pain hypalgesia, to heat hypesthesia, to cold normal.

Astereognosis present; recognizes shape and consistency, but not ob-

Position easily recognized. Special senses normal.

Case XVIII, No. 2. Women's Ward. Mary Griffin, aged eighty-five years. Right hemiplegia of twenty-three years' duration. Movements improved in leg, but arm contracted.

Sensations: Upper limb—Touch normal, pain normal, to heat and cold

normal.

Trunk—Touch and pain normal, to heat and cold hypesthesia.

Lower limb—Touch, temperature and pain normal.

Astereognosis is present; recognizes size, but not shape, and cannot

tell name of object. No paresthesia.

Case XIX, No. 20. Women's Ward. Catherine Boyle, aged fifty-five years. Complete right hemiplegia of one and one half years' duration. Movements improved; upper limb in better condition than lower. Sensations: Upper limb—Touch normal, pain hypalgesia, heat taken

for cold on inner surface, hypesthesia on external aspect, to cold hypes-

thesia (slight).

Trunk—Touch normal, pain hypalgesia (slight), to heat hypesthesia, to

cold normal.

Lower limb—Touch normal, pain hypalgesia (slight), to heat and cold hypesthesia.

Face—Touch normal, pain hypalgesia (slight), to heat hypesthesia

(slight), to cold normal.

Astereognosis present: does not recognize size of objects. Position

is not easily recognized. Paresthesia present. Special senses normal.

Case XX, No. 26. Women's Ward. Mary Jesse, aged forty-six years.

Complete right hemiplegia of eighteen months' duration. Movements are better in arm than in leg, which is contracted.

Sensations: Upper limb—Touch anesthesia, pain analgesia, to heat anesthesia, to cold anesthesia in hand, hypesthesia in forearm, returns to

normal at the root.

Trunk—Touch anesthesia, pain analgesia, to heat anesthesia, to cold some areas anesthesia, some areas hypesthesia, in some areas taken for

Lower limb-Touch anesthesia, pain analgesia, to heat and cold anes-

thesia, but returns to normal towards the hip.

Face—Touch hypesthesia, pain analgesia, to heat anesthesia, to cold

hypesthesia.

Patient has pharyngeal anesthesia, color-fields for white and red contracted. Astereognosis is present. Position not well recognized. Special senses: right pupil large and sluggish to light, gray degeneration of both

optic nerves, more in temporal halves. Paresthesia present.

Case XXI, No. 25. Women's Ward. Anna Williams, aged sixty-two
years. Complete right hemiplegia of four months' duration. Movements

are better in leg than in arm.

Sensations: Upper limb-Touch hypesthesia (marked), pain analgesia, to heat anesthesia on fingers, above hypesthesia; cold taken for heat. Trunk—Touch hypesthesia, pain hypalgesia, to heat and cold hypes-

Lower limb—Touch hypesthesia, pain hypalgesia (slight), to heat hypesthesia (slight), to cold normal.

Astereognosis present: recognizes size with difficulty and cannot

recognize objects. Position not easily recognized. Special senses: hearing

impaired on paralyzed side. Paresthesia present.

Case XXII, No. 15. Women's Ward. Eva Bodge, aged twenty-six years. Complete left hemiplegia since the age of three months. Movements are better in leg, but fairly good in both.

Sensations: Upper limb—Touch normal, pain hypalgesia, to heat hyp-

esthesia, to cold normal.

Trunk and lower limb—Touch, temperature and pain normal.

Face—Normal to three sensations.

Astereognosis present for recognizing objects. Position not easily recognized. Special senses normal. No paresthesia. Marked stigmata of hysteria present. Epileptic seizures since infancy (age three months).

Case XXIII, No. 11. Women's Ward. Mary Bowe, aged sixty-eight years. Complete right hemiplegia of three years' duration. Movements

improved, better in leg than in arm.

Sensations: Upper limb—Touch hypesthesia, pain hypalgesia, to heat hypesthesia, to cold hypesthesia (slight).

Trunk—Touch and pain normal, to heat hypesthesia, to cold normal. Lower limb—Touch, temperature and pain normal.

Face—Normal for three sensations.

Astereognosis present: cannot tell objects. Position not easily recog-

nized. Special senses normal. No paresthesia. Case XXIV, No. 15. Ward I. Richard Pryor, aged fifty-five years, laborer. Complete right hemiplegia (slight) of two months' duration. Arm in much better condition than leg.

Sensations: Upper limb—Touch hypesthesia, pain hypalgesia, to heat

and cold hypesthesia.

Trunk—Touch normal, pain hypalgesia, to heat and cold hypesthesia. Lower limb—Touch normal, pain hypalgesia, to cold hypesthesia on foot and thigh, normal on leg, to heat hypesthesia.

Face—Touch normal, pain hypalgesia, to heat and cold hypesthesia.

Astereognosis present: does not recognize objects. Position is easily

recognized. Special senses normal. No paresthesia. Case XXV, No. 15. Ward II. Thomas Daly, aged fifty-nine years, engineer. Complete left hemiplegia of one year's duration. Movements better in leg than in arm; in both movements are fair.

Sensations: Upper limb—Touch hypesthesia, pain hypalgesia, to heat

anesthesia, cold taken for heat.

Trunk—Touch hypesthesia, pain hypalgesia, to heat hypesthesia, cold

taken for heat.

Lower limb—Touch hypesthesia, pain hypalgesia (marked), to heat anesthesia, cold taken for heat.

Face—Touch hypesthesia, pain hypalgesia, heat taken for cold, cold taken for heat.

Astereognosis present. Position easily recognized. Special senses nor-

No paresthesia.

Case XXVI, No. 9. Ward 1. Samuel Butters, aged forty-four years, dentist. Complete left hemiplegia of three years' duration. Movements better in arm than in leg; in both limbs movements are slight.

Sensations: Upper limb—Touch hyperesthesia, pain hypalgesia, to heat hypesthesia from wrist above, below normal, to cold hypesthesia from

wrist above, normal below.

Trunk-Touch and pain hypesthesia, to heat normal, to cold hypesthe-

sia (slight).
Lower limb—Touch normal, pain hypalgesia, to heat hypesthesia

(slight), to cold hypesthesia.

Astereognosis present for shape of objects. Special senses are impaired: hearing is somewhat impaired. No paresthesia.

Case XXVII, No. 17. Ward I. Colin McPherson, aged sixty years. Complete left hemiplegia of six years' duration. Movements better in leg than in arm; fairly good in both. Sensations: Upper limb—Touch hypesthesia, pain normal, to heat hyp-

esthesia on forearm, normal above and below, to cold normal.

Trunk—Touch, temperature and pain normal.

Lower limb—Touch and pain normal, to heat and cold hypesthesia.

Face—Touch, temperature and pain normal.

Astereognosis present: cannot recognize objects. Position easily recognized. Special senses: slightly deaf on the paralyzed side. Paresthesia present.

Case XXVIII, No. 14. Ward II. James Egan, aged seventy-four years, baker. Complete left hemiplegia of four and a half years' duration.

Movements very much improved in arm and leg, better in leg.
Sensations: Upper limb—Touch anesthesia, pain hypalgesia, to cold hypesthesia (slight), to heat anesthesia from wrist up, hypesthesia below. Trunk—Touch anesthesia, pain hypalgesia, heat taken for cold, to cold hypesthesia.

Lower limb—Touch anesthesia, pain hypalgesia (marked), to heat an-

esthesia, to cold hypesthesia.

Face-Touch normal, pain hypalgesia, to heat anesthesia, to cold hypes-

Astereognosis present: does not recognize objects and their consis-Position not easily recognized. Paresthesia present. senses: hearing impaired.

Case XXIX, Ward V. Peter Kunsick, aged fifty-seven years, machinist. Complete left hemiplegia of two years' duration. Movements better

in leg than arm.

Sensations: Upper limb-Touch hypesthesia, pain hypalgesia, to heat

hypesthesia, to cold hyperesthesia.

Trunk—Touch hypesthesia, pain hypalgesia, to heat hypesthesia, to cold hyperesthesia.

Lower limb-Touch hypesthesia, pain hypalgesia, to heat hypesthesia,

to cold hypesthesia, except on ankle, where it is taken for heat.

Face—Touch normal, pain hypalgesia, to heat hypesthesia, to cold hyperesthesia.

Astereognosis present for size and objects. Position not easily recognized. Special senses involved; hearing impaired. Pupil smaller than

on other side. Paresthesia present.

Case XXX. Ward III. Isaac Jacobs, aged fifty-two years, porter.

Complete left hemiplegia of eighteen months' duration. Movements better

in leg than in arm.

Sensations: Upper limb—Touch hypesthesia, pain hypalgesia, to heat

anesthesia, to cold hypesthesia.

Trunk—Touch normal, pain hypalgesia, to heat hypesthesia (slight), to cold normal.

Lower limb-Touch normal, pain hypalgesia, to heat normal, to cold hypesthesia.

Face—Touch and pain normal, to heat and cold hypesthesia (slight). Astereognosis present. Position easily recognized. Special senses nor-No paresthesia.

Case XXXI, No. 7. Ward III. James Howard, aged sixty-two years. Complete left hemiplegia of two years' duration. Movements slightly improved in arm, but no movements in leg.

Sensations: Upper limb-Touch hypesthesia (slight), pain hypalgesia,

to heat and cold hypesthesia.

Trunk-Touch hypesthesia, pain hypalgesia (marked), to heat hypesthesia (marked), cold taken for heat.

Lower limb-Touch hypesthesia, pain hypalgesia, to heat and cold hypesthesia.

Face—Touch hypesthesia, pain hypalgesia (slight), to heat hypesthesia

(marked), to cold hypesthesia.

Astereognosis present, position not easily recognized. Special senses:

slight impairment of hearing. Paresthesia present. Case XXXII, No. 24. Ward V. Jeremiah Boland, aged seventy-two years. Complete right hemiplegia of seven years' duration. Moves arm fairly well, the leg very little.

Sensations: Upper limb-Touch hypesthesia, pain hypalgesia, to heat

and cold hypesthesia.

Trunk—Touch normal, pain hypalgesia, to heat and cold hypesthesia. Lower limb-Touch normal, pain hypalgesia, to heat and cold hypesthesia.

Face—Touch normal, pain hypalgesia, to heat and cold hyperesthesia. Astereognosis very slight. Position not easily recognized. Special

senses: hearing impaired, right pupil larger than left. No paresthesia.

Case XXXIII, No. 17. Ward V. J. M. McGranan, aged fifty-nine years, carpenter. Complete left hemiplegia of seven years' duration. Movements are absent in arm and leg.

Sensations: Upper limb-Touch hypesthesia, pain hypalgesia (mark-

ed), to heat hypesthesia (marked), cold taken for heat.

Trunk—Touch hypesthesia (slight), pain hypalgesia (marked), to heat anesthesia, to cold hypesthesia (marked).

Lower limb—Touch hypesthesia, pain hypalgesia, heat taken for cold, to cold hypesthesia (marked).

Face—Touch, temperature and pain hypesthesia.

Astereognosis present. Position easily recognized. Special senses: hearing impaired. Left pupil smaller. Paresthesia present.

Case XXXIV. Hollon Boyd, aged forty-two years, Jefferson Hos-Complete hemiplegia of eight years' duration. Movements in leg much better than in arm.

Sensations: Upper limb—Touch hypesthesia, pain hypalgesia, to heat

hypesthesia, cold taken for heat.

Trunk-Touch hypesthesia, pain hypalgesia, to heat hypesthesia in

some areas, in others taken for cold; cold normal.

Lower limb—Touch and pain normal, to heat normal, cold taken for heat

Face—Touch and pain normal, to heat normal, cold taken for heat. Astereognosis complete. Position not easily recognized. Paresthesia

Case XXXV. Charles Sommers, aged sixty-four years, driver, Jefferson Hospital. Complete right hemiplegia of one and one half years' dura-

tion. Movements better in leg than in arm.

Sensations: Upper limb—Touch hypesthesia, pain hypalgesia, heat taken for cold, to cold hypesthesia.

Trunk-Touch hypesthesia, pain hypalgesia, heat taken for cold, to cold hypesthesia.

Lower limb—Touch anesthesia, pain analgesia, heat taken for cold on thigh, anesthesia on leg, to cold anesthesia.

Face—Touch, temperature and pain hypesthesia.

Astereognosis present. Position could not be determined. Paresthesia present.

The disturbances of sensations in these thirty-five cases in order of frequency are:

TOUCH

Upper limb—Hypesthesia (19 cases), normal (11), anesthesia (4), hyperesthesia (1).

Lower limb—Normal (21), hypesthesia (10), anesthesia (5), hyperesthesia (1).

Trunk—Normal (18), hypesthesia (13), anesthesia (4), hyperesthesia (0).

Face—Normal (22), hypesthesia (8), anesthesia (1), hyperesthesia (0).

PAIN

Upper limb—Hypalgesia (25), normal (6), analgesia (5), hyperalgesia (0).

Lower limb—Hypalgesia (21), normal (11), analgesia (2), hyperalgesia (1).

Trunk—Hypalgesia (24), normal (9), analgesia (3), hyperalgesia (0).

Face—Hypalgesia (15), normal (12), analgesia (4), hyperalgesia (0).

TEMPERATURE

Upper limb, heat—Hypesthesia (20), normal (9), anesthesia (8), reversed (4), hyperesthesia (1).

Cold—Hypesthesia (17), normal (9), reversed (5), anesthesia (3), hyperesthesia (3).

Lower limb, heat—Hypesthesia (14), normal (12), anesthesia (8), reversed (3), hyperesthesia (0).

Cold—Hypesthesia (17), normal (13), reversed (4), anesthesia (3), hyperesthesia (1).

Trunk, heat—Hypesthesia (15), normal (11), reversed (5), anesthesia (3), hyperesthesia (0).

Cold—Hypesthesia (15), normal (13), reversed (4), hyperesthesia (3), anesthesia (1).

Face, heat—Normal (14), hypesthesia (12), reversed (2), anesthesia (2), hyperesthesia (1).

Cold—Hypesthesia (13), normal (11), hyperesthesia (3), reversed (2), anesthesia (0).

Astereognosis—Complete in 22 cases, partial in 7 cases.

Position of paralyzed arm—Abnormal in 17 cases, normal in 11 cases.

Paresthesiæ present in 12 cases.

Special senses involved in 11 cases.

The relative frequency of sensory disturbances in different parts of the body:

Upper limb—All three forms of sensations are affected in the majority of cases: for touch we find 24 cases, for pain 30 and for temperature 33 (H) and 28 (C). The hypo-sensations take the greatest number; the anesthesias come next and only a few cases present hyperesthesias. Among the thermic disturbances we find also a reversed condition in some cases, namely, heat is taken for cold and *vice versa*.

Lower limb—The disturbances are as follows: For touch 16 cases, for pain 24, for temperature 25 (H), 25 (C). The hyposensations take the largest number, the anesthesias come next, a few present hyperesthesias. As in the upper limb we also find a few cases with a reversed temperature sense.

Trunk—For touch we find disturbances in 17 cases, for pain in 27, for temperature 23 (H), 23 (C). Reversed temperature sense is found in a few cases.

Face—For touch the disturbances are in 9 cases, for pain in 19, for temperature in 17 (H), 18 (C), also reversed temperature sense is present in a few cases.

We therefore see that, without exception, in all the four portions of the body the pain sense suffers most. Next is temperature, and touch is the least affected. There is also no exception to the fact that whether in pain, touch or temperature, the hypo-sensation takes the largest number of cases, while anesthesias are met with in a comparatively small number, the hyperesthesias in extremely few cases.

It will be also noticed that the largest number of cases has the upper extremity affected with sensory disturbances: this is true for each of the three forms of sensations.

In the lower limb touch and pain are affected in a slightly smaller number of cases than on the trunk, except the temperature sense, which suffers more in the leg than on the trunk.

The face is the least affected.

This can be summarized as follows: Touch—Upper limb, trunk, lower limb, face. Pain—Upper limb, trunk, lower limb, face. Temperature—Upper limb, lower limb, trunk, face.

Verger states that the disturbed sensations have a tendency to become normal from the distal end of the limb towards the root. This assertion I found to be correct in a large number of my cases.

The stereognostic sense was disturbed in 29 cases out of 35, in 22 of which the loss was complete. The greater the involvement of the other sensations, the more marked was astereognosis, a fact which tends to favor the conception of the stereognostic sense as depending upon the integrity of the three cardinal sensations. The sense of posture for the upper limb was involved in but 17 cases out of the 35, a fact which leads to the idea that disturbances of other sensations do not necessarily involve the posture sense; this should be particularly emphasized, since the sensations of the upper limb were disturbed in the great majority of our cases.

Verger and others speak of paresthesia and disturbance of the special senses. As to the first I found it present only in 12 cases.

The special senses were involved only in II cases. Again the last two symptoms were present only in these cases, in which the other sensations suffered to a great extent.

Accepting the fact that sensory disturbances are present, it is interesting to see in what relationship they are to the degree of motor impairment. In 23 cases in which the impairment of motor power was less marked in the lower than in the upper limb, the majority (15 cases) presented less sensory disturbances; six cases, equal sensory disturbances, and only two more sensory disturbances than in the arm. The reverse is the case with the arm: out of eight cases, in which the motor power was better than in the lower limb, in five the sensory disturbances were more marked, in two they were less marked, and in one—equal to those of the leg.

Can we draw any conclusion in regard to a parallelism between motor and sensory disturbances? Taking into consideration the statement mentioned above, that the sensations are disturbed in a far larger number of cases in the upper limb than in any other portion of the body, and that in the majority of cases the motor power in the upper limb suffers more than in the lower limb, we are warranted to conclude in favor of a certain parallelism between motor and sensory disturbances. In favor of this view speaks also the fact that in those cases in which the motor paralysis was not marked the sensory disturbances were also less marked, and in

those cases in which the motor paralysis was much pronounced the sensory disturbances were equally marked.

Is there any relation between the sensory disturbances and the date of the motor paralysis?

I found that in motor palsies of two years', and less, duration, the sensory disturbances are marked in largest number of cases, 13 out of 17. In cases of from two to eight years' duration we find eight in which sensory disturbances are marked, and in three slightly marked. Above this age the sensory disturbances are less marked. It is, therefore, important to note that as a rule the longer the date of motor palsy the less the sensory disturbances are marked.

The results obtained from this study appear to me to be very instructive. Without possessing the pathological data to confirm what my clinical investigations show, can we consider the sensory disturbances in all my cases merely as a coincidence, or as Legroux, Brun, and Mills suggest, that "circulatory disturbances and pressure on neighboring parts beyond those included in the paralyzing lesion account for the impairment of sensation"?

As to the last assertion it is hardly admissible that such a uniformity in the sensory disturbances in my cases should be due to that cause. A great number of cases were recorded by very careful observers in which the lesions were strictly limited to the Rolandic region and in which sensory disturbances were present. On the other hand we know of cases reported by equally careful observers, in which lesions were found in the areas supposed to be sensory while the disturbances were identical with those which were stated in lesions of the Rolandic region.

It is superfluous to go over all the discussions on the sensory localizations. They are too numerous and too well known to the partisans of both doctrines. I merely ask the question: What opinion can we form of the observations in which a lesion strictly limited to the motor area gave sensory disturbances and a lesion of the supposed sensory area gave place also to motor disturbances?

It is true that Dercum and Spiller's case may answer this question but the case is unique and stands isolated, and we have there besides a primary involvement of the *carrefour sensitif*, also one of the lenticular nucleus.

While I was studying these cases, I was surprised at the uni-

formity of the results, just as if the patients had entered into a mutual agreement to present sensory disturbances. I therefore asked myself, if the negative clinical results obtained by the partisans of the doctrine of separate localizations were really negative, for I found that it is not sufficient to content one's self with the statement that such and such a sensation is present. A persistent and repeated investigation will always (at least in my cases) elicit a more or less marked difference in the condition of the sensations on the paralyzed and non-paralyzed sides.

The writers, against whose views these thirty-five cases speak so loudly, claim that in a number of cases in which hemisensory disturbances were found to be present, they may have been due to hysteria. To avoid such a possible error, I intentionally excluded from my series cases with hysterical stigmata, for which symptoms I examined all the cases offered for my investigation.

However, I included one case (XXII) with distinct hysterical stigmata; here, in spite of the presence of this neurosis, the sensory disturbances are not hysterical in their nature, but of the same character as in the other cases.

A conclusion which forces itself upon me is that hemisensory disturbances, *probably*, always accompany a motor paralysis of cerebral origin no matter to what extent the latter is marked: paralytic or even only paretic symptoms will at the same time show sensory symptoms. The demonstration of this depends upon the method and persistence of the investigation.

If this study does not decide completely the problem of sensory and motor localizations for want of pathological data it may, nevertheless, serve as a guide to those who will have the opportunity to make pathological researches. It will stimulate them to examine very carefully the pathological findings. The clinical facts as described in this essay, cannot, and I hope, will not be ignored, for they are based on impartially and carefully collected observations.

Finally this work may serve its purpose by calling the pathologist's attention to the fact that he cannot be too careful in his deductions upon localizations.

I wish to express my indebtedness to Drs. Spiller, Potts and Dercum for their kind permission to use the material of their respective wards.

REPORT OF A CASE OF FAMILIAL TREMOR OF THE HEAD.1

By John K. Mitchell, M.D.

The patient is twenty-two years of age, a student in one of the great Universities. He has had no illnesses beyond those of childhood. As a result of overwork in the laboratory last Winter, he became very nervous, readily excited and irritable, and in January of the present year first noticed the trouble of which he now complains, which has persisted steadily ever since.

He is a slight but well-built and muscular man, taking a good deal of exercise and without any evidences of impaired general health. It was not until after the general nervousness had lasted for some months that he observed that he had a slight lateral tremor of the head. The tremor is a very small one, moderately rapid and almost absolutely constant. It does not appear to be rendered worse by observation, it is not overcome by muscular effort although sometimes during muscular effort it ceases; it cannot be voluntarily stopped, and the effort to stop it does not alter its character. There are no evidences of involvement of the cranial nerves in any way. There are no points of tenderness in the cervical region. The head can be moved with entire freedom in every direction without any pain or spasm. He presents no sign of exophthalmic goiter. His reflexes are universally perfect, his general health is good, and the only thing that could be discovered calling for treatment was a myopic astigmatism very imperfectly corrected.

The point which leads me to report briefly this curious if not very important case is that the difficulty is a familial one. His mother had the same trouble, beginning at twenty-two years of age, and it has continued ever since. It has at times in her case been made worse by illnesses and then gone back to its previous standard on recovery from the acute illness. The patient's maternal grandfather developed a lateral tremor of the head at forty years

¹Read before the Philadelphia Neurological Society, November 25, 1902.

of age and a maternal great-grandfather exhibited it at seventy, but no detail of the trouble in their cases can be had, though they are said to have had no other signs of paralysis agitans. It is possible, of course, that in these instances the two older patients may have been suffering with paralysis agitans, but it is unusual to see it begin in the head before it appears in other parts.

Society Proceedings

PHILADELPHIA NEUROLOGICAL SOCIETY.

November 25, 1902.

The President, Dr. John K. Mitchell, in the chair.

Drs. D. L. Edsall and R. S. Lavinson presented a case of senile chorea. Dr. Alfred Gordon referred to the fact that the majority of patients with senile chorea present symptoms of dementia. Bishop, who has collected a number of these cases, states that sixty per cent. show symptoms of dementia.

With regard to treatment, he stated that in three cases of his own the use of antipyrin had been followed by improvement. Arsenic did not give

beneficial results.

Dr. J. K. Mitchell referred to three cases which he had seen in different generations of the same family. The first case was that of a grand-mother, seen twenty years ago; the second, that of a young woman just married, and the third a case of her child about two or three years old. They all presented typical Sydenham's chorea.

Dr. Alfred Gordon presented a woman with sensory and trophic disturbances of one limb, and also read a paper on traumatic syringomyelia.

Dr. F. X. Dercum said that the case was unique, and that in some of its physical features it resembled one presented by himself at the last meeting of the Society. In his case there were no symptoms of syringomyelia simply a local swelling of the connective tissue resembling myxedema.

Dr. F. S. Pearce thought that the fact that the disturbance of sensation

had extended to the face was rather against the diagnosis of syringomyelia. There must be something beyond the cord; and he could not agree that the changes were confined to the cord; therefore, it was very possible that trauma had to do with the etiology. The trophic changes were very interesting and he thought that their presence would hamper the determination of the exact sensory conditions present.

Dr. William G. Spiller said that he had seen sensory disturbance in the face in syringomyelia, and this disturbance does not necessarily indicate that the lesion is situated higher than the spinal cord or medulla oblongata. The spinal root of the fifth nerve extends down to about the second cervical segment, and this descending root is doubtless concerned with the sensation

of the face.

Dr. W. G. Spiller read a paper on traumatic lesions of the spinal cord without fracture of the vertebræ, and showed by a case with necropsy that it is impossible to make a positive clinical diagnosis between central hem-

atomyelia and traumatic myelitis.

Dr. F. S. Pearce said he had recently seen a case in consultation with Dr. Rodman—that of a woman who had fallen down stairs in somersault fashion, striking her head and falling about a dozen steps. She was immediately paralyzed in all four extremities. The X-ray failed to show any fracture of the vertebræ. The accident occurred last August. The patient is said to have had hysteria, and is now hysterical. She is in a condition of diplegia. She has atrophy of the thenar and hypothenar and interossei muscles, and of the muscles of the lower extremities with lessening of the reflexes of these limbs. The head is not involved. The sensory change has been hypesthesia, especially of the anterior aspect of both legs. She has incontinence and retention of urine, but is able to control the anal sphincter. This seems to be a case in which trauma has produced a myelitis, the prognosis being grave.

Dr. F. X. Dercum reported a case of trauma of the brain, followed by ataxia and focal epilepsy; marked improvement after operation.

Dr. William G. Spiller described a case seen by him last Summer, a man picked up by the side of a railroad who probably had been struck by a locomotive. He had convulsions confined to the left side of the body, and in these convulsions the head and eyes were turned very markedly to the left. This clinical observation supports the view that the center for conjugate deviation must be near the motor centers of the limbs, because if these centers were widely separated, we would not expect in a case like this, in which the convulsions were confined to one side of the body, to find conjugate deviation of the head and eyes.

Dr. Alfred Gordon remarked that the fact that focal epilepsy had been observed in cases where there was tumor of the frontal lobe, showed that the view that focal epilepsy was always due to lesion of the so-called motor

area, was not absolutely correct.

Dr. J. K. Mitchell reported a case of familial tremor of the head.

Periscope.

DEUTSCHE ZEITSCHRIFT FUR NERVENHEILKUNDE

Heft. 5-6.) (Vol. 21, 1902.

21. Psychogenic Pseudo-Meningitis. STARCK.

22. Periependymal Proliferation, Canal Formation, and Abnormal Developmental Processes in the Spinal Canal of Children. Rolly.

23. Criticism of Subcortical Sensory Aphasia. Strohmayer.

- 24. Clinical and Anatomico-Pathological Contribution upon MINGAZZINI.
- 25. Diffuse Sarcoma of the Pia Mater of the Whole Central Nervous System. Nonne.

26. A Contribution to the Knowledge of Disease of the Spinal Cord and Degeneration of the Antero-Lateral Tracts. ZAHN.
 27. Contribution to the Symptomatology and Diagnosis of Tumors of the

Brain and of Chronic Hydrocephalus. FINKELNBURG.

21. Psychogenic Pseudo-Meningitis.—Starck reports the following extraordinary case. A man thirty-one years of age was admitted to the hospital apparently suffering from some rigidity and pains in the neck. When examined it was found that he was suffering from lupus, and that he had had headache, vertigo, pain in the back, but no fever. Three days later he had vomiting and then a severe chill and some tinnitus. The stiffness in the neck continued, there was some sweating, persistent vomiting and loss of control of the bladder. After admission to the hospital the patient was somnolent, all the reflexes were greatly increased, and all forms of sensation were increased. A diagnosis of cerebrospinal meningitis probably tuberculous in nature, was made. The patient could not sleep, from time to time he had convulsions, and there was some gnashing of the teeth; finally distinct trismus developed. The urine obtained by catheter was normal. The pulse was abnormally slow and there was no fever. The symptoms, however, were somewhat suspicious. The convulsions were atypical and the patient's complaints of pain appeared excessive. An attempt was therefore made to hypnotize him which succeeded, and as a result of vigorous suggestion he recovered at once and was able to walk about and eat at the table with the other patients. His recovery was complete and he was discharged. A careful history was finally obtained. He had been an attendant in a hospital and subsequently had been a patient in a number of hospitals in which a diagnosis of meningitis had usually been made. His experience in Heidelburg under Starck had been the sixth as a patient and subsequently it was possible to trace his course in eight other hospitals. Finally in the next to last an operation was performed, the spinal canal opened, and the cerebrospinal fluid found to be under considerable pressure. He did not improve as a result of this until he was transferred to another hospital where he was treated firmly and finally was able to work. Altogether in his various experiences in hospitals, lumbar puncture was performed five times, and in only one case was there a doubtful elevation of pressure. Starck collects the reports of 17 cases from the literature which together with his own and another case of like nature he uses for the purpose of giving a sketch of the clinical history of the disease. There is usually an aura lasting several days or weeks, characterized by discomfort, headache, nausea, vomiting, loss of appetite and depression. Then follows a chill, delirium, fever, headache, stiffness of the neck

and back, tenderness over the spinal column and cramp-like twitching of the muscles. Often there is strabismus, narrow pupils, slow pulse, and various paralytic and vasomotor disturbances. Often the body is retracted, and there is persistent vomiting and obstinate constipation. The delirium increases and finally passes into coma, then suddenly the patient has a prolonged period of sleep and awakes entirely well. Sometimes, however, the symptoms diminish gradually. The disease occurs much more frequently in women, 17 out of 19, and in early adult life, 2 cases having occurred in childhood, and 2 after forty-five years of age. There are often symptoms of nervous heredity, and occasionally of tuberculous antecedents. The diagnosis can often be suspected when hysterical stigmata are present. The difficulty most frequently occurs in connection with tuberculous meningitis, of course, although occasionally pseudomeningitis and traumatic tetanus may be suspected. Starck prefers the name "psychogenic meningitis" in order to distinguish it from the condition called pseudomeningitis by German writers, which occurs particularly in infectious fevers.

22. Abnormal Developmenta' Spinal Canal.—Rolly examined the spinal cords of two children suffering from so-called general congenital spasticity of the muscles, and found certain peculiar changes in the cord characterized by diffuse proliferation of the neuroglia tissue and some leptomeningitis. In addition to this there was in the first case apparently a doubling of the central canal with proliferation of the neuroglia cells, particularly in the posterior one. From time to time horizontal canals were found uniting these two. Carefully studied serial sections seemed to show that the cells surrounding the central canals which in all respects resembled glia cells, were derived from those of the ependyma. The size of the canal varied greatly: at times it was obliterated, at others quite large. In the second case of the same condition practically similar changes were found, particularly the alternation of a dilated with an obliterated canal. He therefore carefully studied the spinal cords of several other children, and in one of these found some proliferation of the neuroglia in the central canal. This child was an idiot. There was a general tremor when it sat up, and its movements indicated some spasm of the muscles. In this case there was a variable number of canals at different levels of the spinal cord. It is not impossible that the changes in this case may bear some relation to those found ordinarily in syringomyelia. He does not attempt to determine whether there is any relation between them and syphilis.

23. Subcortical Sensory Aphasia.—Strohmayer reports some cases of subcortical sensory aphasia. The first, a man of thirty-six years, who had had luetic infection eight years before, six years after this noticed loss of memory and rapid intellectual fatigue. He then had an epileptic attack followed by a second attack with transient paralysis of speech and pain in the right ear. After a third attack he was maniacal but energetic specific treatment apparently prevented any other attacks, although the pain in the right ear and the weakness of memory continued. When examined there were found several syphilitic manifestations, and it was noted that the patient heard badly and that he did not understand spoken words although he could hear faint sounds easily. Written speech he understood very well. The patient gradually grew worse, had athetoid movements, and finally died. A diagnosis of atypical dementia paralytica with focal symptoms of subcortical sensory aphasia in the sense of Wernicke-Lichtheim, was made. At the autopsy there was found an area of softening in the median anterior third of the left thalamus opticus, and an old extravasation of blood, in the right temporo-sphenoidal lobe between the second and third convolutions, and in both temporo-sphenoidal lobes some change in the appearance of the cortex which was found to be due to a fibrous leptomeningitis. Therefore, the chief change was a diffuse lesion of the cortex and not a subcortical focal lesion. Strohmayer has collected 12 cases of subcortical

aphasia which he tabulates and shows that various pathological lesions

can cause the symptoms.

He reports a second case of his own, a woman of fifty-three years, who developed pain in the neck and back of the head, scotomata before the eyes, vomiting, loss of power to walk, vertigo, and peculiar weakness of memory, consisting of difficulty in recalling names. A diagnosis of cerebral tumor in the region of the anterior portion of the corpus callosum was made. At the autopsy a tumor was found about 20 mm. posterior to the end of the corpus callosum in the median line, about the size of a cherry. Tumors were also found in both cerebellar hemispheres, in the second right occipital lobe, in the right temporo-sphenoidal lobe, in the neighborhood of the second convolution, and an area of softening in the left temporo-sphenoidal lobe. These were all probably secondary to a carcinomatous neoplasm of the pleura. In this case subcortical lesion had not given rise to subcortical aphasia, and he therefore believes that we should discard this name entirely and restrict ourselves to the clinical term "wordblindness.

24. Aphasia.—Mingazzini reports the following case of aphasia: A woman, sixty-seven years of age who had been an alcoholic, at the age of sixty-three had had a fall injuring her head, following which there was headache. Then she began to have paraphasia, loss of the ability to understand questions, inability to dress herself, and confusion of the various implements that she used, such as knives and forks. Finally she had convulsions resembling epilepsy. The patient finally became unable to make more than unintelligible sounds and died. There was atrophy of the entire brain, the convolutions were smaller and Nissl's method showed changes in the pyramidal cells. The case illustrates the fact that progres-

sive atrophy of the brain may lead to typical aphasic disturbances.

25. Sarcoma of Pia Mater.—Nonne reports the case of a girl sixteen years of age who had an attack characterized by a feeling of foreign body in the larynx and then pain radiating over various parts of the body. There were clonic movements in the extremities, but nevertheless a diagnosis of hysteria was made. Five months later the patient was readmitted with severe pains in the neck, back and lumbar region. Three weeks previously she had suddenly become blind. There was cachexia, and hallucinations of hearing and sight, but the patient was apathetic and weak-minded. She improved somewhat, the pupils showed extraordinary changes, alternating between mydriasis and myosis, one changing at a time and showing great irregularity of ordinary pupillary reactions. The patellar reflexes were lost. Later there was paralysis of both oculomotor nerves and there was some doubt as to whether there was atrophy of the optic nerves or not. Lumbar puncture showed an increased pressure. From time to time the patient could see and hear and then would again become blind and deaf. She finally died. A diagnosis of cerebral tumor in the region of the corpora quadrigemina with metastasis to the spinal column was made. At the autopsy an absolutely negative macroscopical brain and spinal cord were found. Microscopically, however, it was found that the whole pia was filled with a proliferation of new cells. This was of the character of sar-The central nervous system appeared to be normal. Nonne discusses similar cases that have been reported, and believes that the extraordinary variation in the severity of the symptoms is due to the peculiar way in which the tumor mass affects the blood vessels. Although young persons are most frequently affected, cases have been reported occurring in individuals up to sixty years of age.
26. Degeneration of Antero-lateral Tracts.—Zahn reports the case of

a girl twenty-six years of age, who at the age of sixteen had had difficulty

in speech and uncertain gait. Her father had died after having had the same disease for twenty-four years. When examined it was found that the muscles were spastic, there was no degeneration, the reflexes were greatly increased, ankle-clonus was present, muscular power was not diminished, and there were no defects in the organs. Sensation was apparently normal. The disturbance of speech was due to the involuntary movements of the muscles of articulation. The patient was under observation for some time, and her gait was improved by practice. She finally died as a result of septic peritonitis. At the autopsy the pia mater of the spinal cord was found irregularly thickened, and there was degeneration of the pyramidal tracts, although the intensity of the degeneration varied at different levels. There was slight degeneration of the posterior columns in the upper portion. Zahn does not believe that this irregular degeneration of the white substance of the cord is to be looked upon as secondary. The best explanation seems to be the assumption that the process is a sort of hereditary degeneration, and it does not appear likely that an accurate diagnosis of the

condition could have been made during life.

27. Tumors of Brain and Hydrocephalus.-Finkelnburg has analyzed 67 cases of brain tumor occurring in the medical clinic at Bonn. He tabulates the cases according to the anatomical situation of the tumors. There were 22 cases of tumor of the cerebellum, 13 of which were confirmed by autopsy. In three cases operations were performed, one of which resulted successfully. In four cases confirmed by autopsy choked disk was absent. In three cases the patients had cardiac arhythmia and disturbance of respiration when the head was moved. There was considerable difference in the behavior of the reflexes. Some of the cases were exceedingly difficult to diagnose. He mentions one case, a child in the fourth year of life with difficulty in walking, enlargement of the head, choked disk, disturbance of sensation in the area of the right trigeminal nerve, and paresis of the lower facial. There was increased pressure in the spinal cord, and at the autopsy a sarcoma of the base of the right hemisphere was found with internal hydrocephalus. In another case the patient had a cerebellar gait, pain in the back of the head, weakness and vertigo. There was also nystagmus, increase in the tendon reflexes, Romberg's symptom, but no choked disk. Four years later the patient presented typical picture of multiple sclerosis. There were 27 cases of cerebral tumors sufficiently carefully studied for statistical purposes. The reflexes showed marked variations. Eight cases were subjected to operation five times merely to relieve the symptoms, and in two of these considerable improvement occurred. In three other cases the tumors were found at the operations. In two of these the patients died, and in the third the tumor was so large that only a part could be removed. Some of the cases were exceedingly interesting. In one commencing in the fifteenth year there was increased thirst, polyuria, gradual loss of sight, development of staggering gait and death, after 41/2 years. At the autopsy sarcomatous proliferation was found in both ventricles. In another case the patient had nervousness, headache, vertigo, choked disks, increased tendon reflexes, cerebellar ataxia, but no focal symptoms. A round cell sarcoma was found on the floor of the fourth ventricle. In still another case the patient had headache, vertigo, staggering gait, vomiting, weakness in the left facial nerve, choked disks, alternating hemiplegia, progressive apathy, temporary improvement and finally death. A glioma was found in the third ventricle involving the right crus and tegmental region. Some interesting observations of tumors and other disease conditions of the base of the brain are given. In one case hemicrania had existed for 20 years, then gradual loss of sight in the left eye took place, loss of muscular control in the right eye, right hemiplegia and disturbance of speech. A diagnosis of tumor of the sella turcica was made, but an autopsy was not obtained. In another case multiple spindle-celled sarcomata were found,

but during the clinical course the patient had improved remarkably upon a mixed treatment. The histories of several other cases of multiple tumors are also given, also of several cases of chronic hydrocephalus simulating brain tumor, and Finkelnburg summarizes the symptoms of this condition as follows; Chronic development without distinct initial symptoms of meningitis; very slow course with marked remissions; at first symptoms of intracranial pressure, which may disappear entirely; or leave atrophy of the optic nerves only; absence of symptoms of focal disease; early occurrence of vision and weakening of the patellar reflexes.

J. SAILER (Philadelphia).

NEUROLOGISCHES CENTRALBLATT

(Vol. 21, 1902, No. 20. Oct. 16.)

I. A Case of Arsenical Paralysis. J. Kron.

A Case of Katatonia following the First Menstrual Period. H. Mucha.
 Paradoxical Pupillary Contraction and an Observation of Contraction of the Pupil by Shading the Eyes. J. PILTZ.

I. Arsenical Paralysis.—Report of a case of neuro-arsenical neuritis following the ingestion of four grains of arsenic during twenty hours.

2. Katatonia.—Report of a case of typical katatonia during the first menstrual period. Mucha calls attention to the early age of his patient, fifteen years.

3. Continued article.

(Vol. 21, 1902, No. 21. Nov. 1.)

I. Psychology of Motor Apraxia. A. Pick.

2. The So-called "Myotonia" Slowness during Convergence of Pupils with Loss of Reflex to Light. Nonne.

3. Contribution to the Localization of Cerebral Hemianesthesia. Karl Schaffer.

4. Paradoxical Pupillary Contraction and an Observation of Contraction of the Pupil by Shading the Eyes. J. Piltz.

1. Motor Apraxia.—Report of a case of what Pick considers a pure motor apraxia. The attacks of inability to find the words he wanted to use, were intermittent in character, occurring every two weeks and lasted several days. The only motor phenomenon was a spasmodic contraction

of the masseter.

2. Myotonic Slowness.—Nonne adds a case of myotonic contraction of the pupil to those already discussed in the Centralblatt. This case occurred in a patient with diabetes and anchylosis of the spine and the pupillary phenomenon was unilateral. The time reaction for dilation of the pupil after contraction was five minutes. Another case in an alcoholic was also men-

tioned.

- 3. Cerebral Hemianesthesia.—Schaffer gives the results of a careful examination of the brain of a boy of eighteen years who died from heart failure. He had for some time motor and sensory paralysis localized to one side of the body. The cerebral lesion affected the anterior and posterior central gyri and extended deep into the cerebral substance. The posterior limb of the internal capsule was affected only in its anterior third. The view of Dejerine and Long are carefully considered in connection with the findings of this case.
 - 4. To be continued.

(Vol. 21, 1902, No. 22. Nov. 16.)

1. The Difference in Prognosis between Nerve Paralysis and Nerve Trunk Paralysis. L. Bruns.

2. Sluggishness in Accommodation and Convergence, or Myotonic Pupillary Movement? J. Strasburger.

3. Paradoxical Pupillary Reaction and an Observation on Contraction of the Pupil by Shading the Eyes. J. Piltz.

1. Nerve Plexus and Nerve Trunk Paralysis.—Bruns gives a critical analysis of 70 cases, 15 of which were plexus paralysis. He discusses the cause, intensity, and the time of the lesion as essential factors in making the prognosis. In cases of plexus paralysis when an involvement of the roots is suspected, or as in some cases in which the spinal cord itself is similarly involved, the prognosis is in proportion unfavorable. He thinks that such lesions of the nerve roots occur much more frequently in plexus lesions than has heretofore been accepted. He therefore arrives at the conclusion that so far as prognosis is concerned, plexus paralysis should take a middle position between the favorable peripheral nerve palsies and the very unfavorable spinal palsies.

2. Myotonic Sluggishness.—A controversial article with Sänger, as to the propriety and grounds for calling the sluggish contraction noted by

these two observers, "Myotonic Contraction."

3. Pupillary Paradoxical Phenomenon.—Report of a case of true paradoxical pupillary phenomenon. After a careful review of the literature and of the different varieties of irregular pupillary action to light and convergence, Piltz concludes that true paradoxical light reaction is an exceedingly rare symptom, which up to the present time has been met with only in organic disease of the central nervous system.

(Vol. 21, 1902, No. 23. Dec. 1.)

I. Is there an Autogenetic Regeneration of Nerve Fibers? A Contribution to the Neurone Theory. E. Munzer.

2. Observations on Winter Therapy in Mountain Climates. B. Laquer.

I. Autogenetic Regeneration.—Munzer after a careful study of the work of Bethe on the endogenous regeneration of nerve fibers in rabbits, supports his conclusions in so far as they pertain to the presence of newformed nerve fibers in the distal stump of a cut nerve, but holds that the production of these new fibers from the cut fibers themselves is not proven. He finds that at the proximal end of the distal stump a nodule forms, but that this node is in connection with the nerves of the neighboring tissues; that new nerves forming in this node are independent of "centralization" is therefore not proven.

2. Winter Therapy.—A paper on the indications and contraindications

to high altitude treatment for functional nervous diseases.

D. J. McCarthy (Philadelphia).

PSYCHIATRISCH -NEUROLOGISCHE WOCHENSCHRIFT

(Vol. 4, 1902, No. 32.)

I. Concerning the Bias of Hospital Physicians as Medical-legal Experts.

DR. PFAUSLER, Director in Valduna.

This article of Dr. Pfausler is a retort to a criticism by some members of the legal profession of an article of his appearing in No. 7 of the present volume of this journal, in which he had asserted the fitness of the hospital physician for this work over that of the general practitioners summoned as experts by the Court. He lays special stress upon the protection afforded to society when the insane criminal is committed to a hospital upon the examination of the hospital physician and compelled to remain there until discharged at his discretion, rather than being sent to prison after an examination by the so-called experts for a definite term and then turned loose in the community while still insane. In substantiating his position, Professor Kraepelin is quoted extensively.

(Vol. 4, 1902, Nos. 33 and 34.)

I. Was Mohammed an Epileptic? Dr. Med. M. L. Moharrem Bey.

In this interesting article the author reopens this discussion, and from a purely medical standpoint reviews the biographical literature and traditions concerning the family history, the early life, and especially the first revelation, and following this experience the partially unconscious states into which the prophet so frequently lapsed when receiving other revelations; and concludes that there is no basis for the assumption that Mohammed was an epileptic. He calls attention to the character of the so-called attacks when he would lie down upon the floor and would be covered with a garment and have a pillow placed under his head by those near him, and distinguishes them from the genuine epileptic attacks. These attacks were not followed by stupor, but the prophet would arouse himself quickly and begin at once to relate his divine revelation. Furthermore, the character of his intelligence which was maintained until his death at six-ty-three of an acute febrile disease rules out the possibility of his having suf-

(Vol. 4, 1902, No. 34.)

I. One-sided Delirium. Professor E. Bleuler.

fered in any degree from epileptic dementia.

This singular condition occurred during a paralytic attack of a paretic of two years' standing and fifty-one years of age. The course of the disease up to the time of the occurrence of this attack had been characterized by several paretic seizures. In this attack which was of twelve hours' duration, there seemed to be a dissociation of the movements of the right and left upper extremities. When first seen in the morning the right hand and arm were in constant motion, sometimes purposeful, at other times purposeless. What the right hand disordered, the left hand put to rights, and at times the left attempted to restrain the right. This continued throughout the morning. At noon, sensation on the left side of the body was found to be unimpaired, and occasionally tests for the same elicited defensive movements from the right side; while tests on the right side simply intensified its movements. Both legs from the onset presented convulsive movements. Strong stimulation of the right side produced energetic convulsive, purposeful movements, as if the right side was struggling against a phantom, in which the left did not participate. Two hours later the diversion of the two sides had become even more marked. At this time an attempt to place the patient on his feet caused incoördinate movements of both lower limbs. In the evening the two hands acted more in unison for short periods. Later, suddenly an attack occurred in which the right hand made gestures as if trying to snatch up and toss away rats, and as if battling with a phantom man to whom the patient spoke threateningly, while the left hand gesticulated as if trying to defend the head from a swarm of bees. After getting on his feet, each leg struggled to walk towards its own side, but soon the right prevailed and the patient went about in a circle. When returned to bed the movements of the right side continued; the left had already subsided. This continued for about an hour when it increased greatly and was combined with powerful movements of the leg which required the administration of chloral. The movements were suspended during the sleep which followed. During the entire day the patient was able to comprehend questions. Spontaneous speech was "delirious." He remained quiet when the left hand was held but restraint of the right caused irritability. The eyes and head were drawn to the right. The patient had no memory of the attack the following day. Increased activity of the right side continued for two days.

His conclusion is that each hemisphere of the brain seems to be able to apprehend impressions of the outside world independently, and can carry out complicated movements corresponding with these impressions, and cites in support of this view, cases in which one-half of the brain has been sufficient to maintain a psychical personality

Ross Defendorf (Middletown).

JOURNAL OF MENTAL SCIENCE

(Vol. 48, 1902. October.)

- I. Presidential Address Medico-Psychological Association. J. Wiggles-
- 2. A Statistical Contribution to the Pathology of Insanity. T. Duncan GREENLEES.
- 3. Importance of Stimulus in Repair and Decay of the Nervous System. F. W. Мотт.
- 4. Some Remarks on the Surgical Treatment of Insanity. DAMER HAR-RISSON.
- 5. Treatment of Incipient and Transient Mental States in General Hospitals. T. S. Clouston.

 6. Medico-Psychological Statistics. C. Hubert Bond.

 7. Observations on the Neuroglia Cell and its Processes. R. R. Leeper.

8. Pathogenesis of Diabetic Insanity. W. R. DAWSON.

9. Care of Idiots and Imbeciles. J. H. Sproat.
10. Mental Symptoms and Bodily Disease. Nathan Raw.

I. Medico-Psychological Society.—This is the presidential address delivered at the sixty-first annual meeting. The general topic of the substances in the germ cell involved in the hereditary transmission of insanity is first discussed by the author, this leading up to an analysis of the family histories of some 3,445 insane patients admitted into the Rainhill Asylum during the past twelve years. Out of this entire number definite family history of hereditary taint was found in 28 per cent. Paternal and maternal influences were about equally important, in 350 patients, the fathers were insane in 185 instances and the mothers 165. On the question of parentage and sex liability he finds that female children are more numerously affected independent of the sex of the affected parent, a slight increase is noted for insane mothers transmitting insanity to daughters than to sons. On the general biological question of the transmission of acquired characteristics the author then makes some interesting observations. For juvenile general paresis the author believes that it owes its origin to antecedent parental syphilis and that the parasyphilitic influence has been exerted in the germ cells to modify their nutrition and thus lead to degenerations in the offspring. Certain forms of general paresis in the adult may have a like origin. The address is a scholarly one and contributes much to the discussion of this important problem.

2. Pathology of Insanity.—Dr. Greenlees of South Africa offers a statistical contribution on the condition of the various organs of those dying

of insanity. It is too detailed to permit abstracting.

3. Stimulus in Repair and Decay of the Nervous System.—Dr. Mott first discusses the nature of stimulus from the physical viewpoint, then takes up the question on its psychological side and later considers the anatomical and physiological substrata of nervous energy. Nerve fibers, he says, have been shown to be incapable of fatigue and he makes some interesting observations on the functions of the myelin sheath which he maintains has other functions than that of serving as an insulator. Impulses transmitted by non-medullated fibers of visceral and vascular structures are of low intensity compared with the medullated fiber of somatic structures. The chemical constituents of myelin are found in the cerebrospinal fluid. The development of the myelin sheath is correlated with the ratio of incoming stimuli, those parts first stimulated being the first myelinated, and other experiments prove that stimulation causes the formation of myelin. The reverse is true also and the absence of an inflow of nerve stimuli causes an atrophy of the protagon of the the myelin sheath. Regeneration seems to be dependent on stimulation. He then discusses the effects of excessive stimulus showing that katabolism is the normal concomitant of the passage of nerve stimuli and if the neurones are in a low state of nutritional equilibrium the processes of disintegration are in excess of those of integration. The vulnerable part of the neurone is that furthest away from the center and in poison states it is usually the outlying collaterals that are first affected. Many poisons thus produce a loss of durability, an abiotrophy and therefore a nutritional deficiency which interferes with the balance of repair to waste.

4. Surgical Treatment of Insanity.—The author reports three cases

of traumatic insanity with recovery following operation.

5. Treatment of Insane in General Hospita's.—Dr. Clouston opens a discussion on this point saying that at the present time there are no facilities for treating the acute insane as other acute diseases are treated in general hospitals and that there exists a great need for better provisional care of the acute insane than now exists in many places in England. Asylum extension will not fill the need and he makes a strong plea for the development of psychopathic wards in general hospitals. The ideal system should be fourfold—(1) A mental ward in the hospital for incipient, transient, and suitable cases; (2) a reception hospital for certifiable cases of an acute character situated near a large town with plenty of nurses and plenty of medical attention; (3) an ordinary asylum for cases that run on from month to month; (4) a boarding out system for the really quiet and manageable cases who could be restored in a modified degree to family

6. Medico-psychological Statistics.—A series of tables for the recording of symptoms in order to bring out greater uniformity. Too

detailed for abstracting.
7. The Neuroglia Cell and Its Processes.—Dr. R. Leeper contributes a few general suggestions on the possible functions of the neurog-

lia cells.

8. Pathogenesis of Diabetic Insanity.—A short note of uncertain foundations on this subject.

9. Care of Idiots and Imbeciles .- A short note on the custodial care

of this class of defectives.

10. Mental Symptoms and Bodily Disease.—A criticism of existing legislation on the care of certain types of insanity-delirium tremens in particular. Of local interest solely.

JELLIFFE.

AMERICAN JOURNAL OF INSANITY

(Vol. 59, 1902, No. 1. October.)

I. The Criteria of Insanity and the Problems of Psychiatry. ABBOT.

2. On the Typhoid Psychoses. FARRER.

3. Some Points in the Diagnosis of Dementia Præcox. Dunton.

4. A Case of Huntington's Chorea with Autopsy. Rusk. 5. On Some Terminal Diseases in Melancholia. MEYER.

- 6. Hydriatic Procedures as an Adjunct in the Treatment of Insanity. DENT.
- 7. Medico-Legal Phases of the Vermont Observation Law for Criminal Insane. BERRY.
- 8. The Possible Influence of Rational Conversation on the Insane. Buck-
- 1. The Criteria of Insanity and the Problems of Psychiatry.—The definitions by Krafft-Ebing, Maudsley and Spitzka are quoted and their incompleteness shown, as they leave out of consideration largely the

condition of environment, or even entirely, which is the cardinal factor in judging a person's actions, whether sane or insane, then the individual's understanding or conception of his environment in all its elements, and whether his failure in this respect is due to ignorance or error, and the latter carries with it the motive or purpose of his action; then again whether the individual acts from choice or was unable to do or think differently. From these data insanity is defined as a morbid condition of the mind, which renders it impossible for the conscious individual to think, feel or act in relation to his environment, in accordance with the standards of his bringing up. Thus ascertaining what the essence of insanity is, its form is the next problem to be considered, and consists in ascertaining the ways in which the insane person is unable to think, feel and act in relation to his environment, in other words observation and description of his thoughts, feelings and actions, where detail is an essential, therefore not only is the individual's environment to be noted, but his conception of it, his affective reaction to it, and his acts. His delusions are to be recorded in his own words, not our judgment of them, and he is to be drawn out as to the ideas he entertains, whether oriented as to time, place and persons, of his perception of his duties and obligations to others, ctc. Further, his memory as well as his capacity to receive, retain and recall impressions, and the character of the ideas associated in his mind are to be ascertained. His affect and his own expression of his feelings are to be noted. The motive of actions must be inquired into. Then as to the causes, whether in the environment, such as heredity and conditions causing anxiety, overwork or excesses, and in the individual himself. Various physical conditions induce abnormal mental states, and therefore these must be investigated, further various examinations of the blood, urine, excreta, etc., made, as well as of the physiological chemical processes, and psychological investigations carried out. Clinical histories of such a character enhance the value of post-mortem data many fold. Nevertheless equipped laboratories are not essential for the careful study of psychiatric symptoms, for they are mental phenomena.

2. On the Typhoid Psychoses.—The author's résumé gives the essential data of this paper and is therefore quoted verbatim: "Typhoid fever attacking a sane person may leave him free from psychic symptoms or give rise to all gradations of mental disease; the severity of the symptoms does not necessarily stand in relation to the height of the fever or the pro-foundness of the infection; persons of psychopathic heredity are more prone to alienation, especially initial delirium, than those not thus burdened; a protracted exhausting fever predisposes to an asthenic psychosis; a second and third attack of typhoid is more likely to present mental troubles than the first. Concerning the special disease types, it is shown that initial delirium is the rarest form, exhibits the most rapid course and the worst prognosis, over 50 per cent, ending fatally; that it is essentially the expression of severe intoxication, the Nissl findings confirming this view; that it often causes errors in diagnosis; that any case of mental derangement with fever justifies the suspicion of typhoid. It is seen that the febrile psychoses are of greatest frequency and afford the best outlook; that 25 per cent., however, persists for varying lengths of time into and after convalescence; that they are especially due to the elevation of temperature and its consequences; that the asthenic psychoses (excepting conceptions delirantes isolees, and cases of typhoid collapse delirium), present long weary courses and a doubtful outlook, with evidences of serious cerebral changes; that they develop upon a basis of exhaustion, anemia and malnutrition; further, that a post-typhoid predisposition (irritable weakness) exists, upon which may develop late psychoses, with a dubious prognosis. As a result of the metabolic revolution accompanying severe

infections, it is seen that an attack of typhoid has been followed in many instances of so-called recoverable psychoses, by temporary improvement or recovery. Finally, that neither in its clinical nor anatomical picture is the typhoid psychosis distinctive; that the elements of intoxication, infection, temperature, exhaustion, anemia, of whatever origin, may produce similar or indistinguishable appearances; and that the determining factor of susceptibility to mental disorder, as well as often course and event, may be expressed in a word as the mental reaction-coefficient of the individual

together with its physical basis.'

3. Some Points in the Diagnosis of Dementia Praecox.—A mechanical irritability of the facial nerve has often been found to exist in a very pronounced manner and to be of diagnostic value when associated with mental aberration. It is obtained as follows: when the patient's cheek is tapped lightly with a percussion hammer just in front of the ear, being careful to exclude any visual impulse, a noticeable movement of the orbicularis palpebrarum occurs, varying in intensity from a marked contraction of the whole muscle, combined with that of other muscles of the face, to a slight tremor of the fibers of the inferior portion of the orbicularis. It is not present in all cases, but most pronounced in the later stages. The tendon phenomena are exaggerated in every case, superficial reflexes also increased. Sudden impulses are an important feature, occurring without any warning, the patient unable to give any reason for them and often denies them. Stupor or confusion is usually increased after the act. In the paranoid state delusional explanation of it may be given. The slow psychical reaction is an important diagnostic sign. It is difficult and often impossible to differentiate negativism from delusional resistance, therefore it is of doubtful diagnostic value.

4. A Case of Huntington's Chorea with Autopsy.—The patient, a clergyman, fifty-six years of age on admission, died with Huntington's chorea at the age of sixty. The results of the autopsy are summarized by the author as follows: "The essential lesion consists in the diminution in size of nervous elements generally, an increase in pigment content of the nerve cells, especially in those of the cerebellum; an overgrowth of neuroglia tissue—the relation of which to the nervous elements seems to be passive and possibly accounted for by the so-called 'tissue tension'—a shrinkage of the cells in the dorsal root ganglia with the analogous proliferation of the endothelial cells of their capsules, a pigmentary degeneration of the neuroglia, and a degeneration of the white matter

matter about the periphery of the cord.'

5. On Some Terminal Disease in Melancholia.—From the autopsies of 36 cases of melancholia the immediate causes of death were found to be phthisis in two cases, lobar pneumonia in four, bronchopneumonia in fourteen, pulmonary infarcts in six, sepsis (from cystitis, pyonephrosis and parotitis and twice perirectal abscesses), in four cases, enteritis in three, suffocation in one and suicide in one. Phthisis, lobar pneumonia, diphtheria and suicide are eliminated. The fourteen cases of bronchopneumonia were accounted for in one by fracture of several ribs, in seven accompanied a "central neuritis," in the remaining six devility, difficulty in swallowing and forced feeding. As this disease is the result of ingestion of foreign material, the danger from forcing feeble patients to swallow food is obvious. Certain dangers follow rectal feeding, two fatal cases having resulted from rectal ulceration and its sequela, further the rectum has been perforated, once by overdistension and bursting at the sigmoid flexure, in another by perforation by the rectal tube. Ulceration of the rectum often leads to cystitis. In pulmonary infarct patients died suddenly, even after all precautions as to quiet were maintained, and there are no means to prevent this termination. The case of suffocation occurred in a weakened patient from syncope from undue

exertion. The "insane ear" has of late become rare, and the better class of attendants is the reason, and many cases of internal hemorrhagic pachymeningitis are due to practically the same cause; therefore falls, bumps and bruises are to be guarded against in those patients whose tissues are degenerated. A debilitating diarrhea often attends cases of "central neuritis" or "systemic parenchymatous degenerations" mainly indicating the central nervous system. In depressive conditions patients often become feeble, take to their beds with variable attacks of diarrhea and often attended with a peculiar rigidity of nearly all the muscles and occasional twitchings in the face and extremities. Careful observation discloses the following symptoms: "Resistance, rigidity, peculiar tetanoid attitudes of the extremities, and frequently grimacing with the risus sardonicus, irregular twitching and jactations appearing in exacerbations. The reflexes are usually exaggerated, rarely absent." Babinski's reflex was found in one case. No electric changes. The difficulty of coördination soon involves speech and deglutition, and diarrhea often noticed with slight fluctuations in temperature. Condition may last for a few days or a couple of weeks, and if it improves for a time a fatal relapse is bound to occur. On autopsy besides the motor cells, those of the columns of Clarke, of Dieters' nucleus, the central nucleus of the medulla and the nuclei of Goll and Burdach are found involved. Further decay of the myeline sheaths in the pyramidal tracts, the connection of the cortical projection fields with the thalamic nuclei, the fibers of the fillet, the restiform body and the posterior columns of the cord. The changes are different from those in general paresis. The problem is the correlation of the anatomical findings with the important features of the symptom complex and the way in which the condition might be produced. The combination of a rigidity with characteristic attitudes, and perhaps twitchings, is the feature most directly related to the affection chiefly of the cerebral and cerebellar suprasegmental mechanisms. As to the causation, symmetrical parenchymatous affections in the nervous system are usually re-

ferred to toxins. Dr. Meyer urges further study of these conditions.
6. Hydriatic Procedures as an Adjunct in the Treatment of Insanity.—The case of a girl of eighteen is cited, whose occupation, that of a factory operator, suffering from an attack of acute agitated melancholia of three weeks' duration. Soon after admission she was given a warm pack, which had a marked sedative effect and induced sleep. The warm packs were continued during the first week twice a day for three hours, at the end of which time the patient slept better, bowels relieved and toxic manifestations, which were prominent at the This treatment was then discontinued, but in about two weeks mental symptoms returned, accompanied by numerous small furuncles, when a hot air bath of 180° F. for ten minutes was given daily, followed by a needle bath of 60° at 15 pounds pressure for one minute. At the end of the first week of this treatment the mental symptoms subsided, appetite improved, sleep became quiet and restful. At the end of the third week of this treatment she was given tonics, while the Scotch douche at a temperature of 100° F.-59° F. with 25 pounds pressure was substituted for the needle bath. This was continued for three weeks and then discontinued. Patient discharged recovered in four months after admission, having gained 28 pounds in weight. A second case was that of a young married woman of twenty, who became insane after her first confinement. Disease had existed three months prior to admission, when she was dull, depressed and refused to speak, being too confused to answer questions. Refused food, sleep excessive, physical condition fair. Her treatment consisted of a hot air bath of 180 F. for ten minutes, followed by jet douche at a temperature

of 50° with 25 pounds pressure for one minute, and followed by light massage. No apparent mental improvement during the first week, but physical condition bettered. During second week became brighter and more active. At the end of the third week Scotch douche at a temperature of II0°-59° for two minutes with a pressure of 59 pounds, was substituted for the jet douche. She continued to improve mentally and physically. The Scotch douche was continued daily for three weeks, when all treatment was discontinued. Discharged recovered in four months, having gained 30 pounds in weight. A young Russian woman of thirty admitted with acute mania with delirium one week after the onset of the disease, which was ascribed to lactation. Physical condition good. After washing out the stomach she was given a Sitz bath at 100° gradually increased to 112°, with local massage of the abdomen and pelvis while in the bath; was kept in the bath twenty minutes, when she became much quieter, though still delirious. Becoming very noisy and violent six hours later she was given hot full bath at a temperature of 100° gradually increased to 112°. At the end of one hour she showed signs of exhaustion; stimulated, put in bed and heavily covered to continue perspiration; this continued two hours, when she became quiet and slept several hours. On the second day again noisy and maniacal, but delirium not so marked. Hot full bath repeated at same temperature, and continued on three days, when she was much quieter, the delirium had subsided, yet maniacal symptoms continued for two weeks, and received full hot bath daily at bedtime, which procured her good nights. Her symptoms had all disappeared three weeks after admission and was discharged recovered after two months at the hospital. Packs, warm and hot full baths have hypnotic and sedative effect, and are also excellent eliminatives. Sprays and douches have decided tonic effect on glandular action and general cutaneous circulation. No conditions contraindicate hydrotherapy, except advanced pregnancy, pleurisy or when patient is practically moribund. Serious exhaustion is a danger attending warm packs and hot full baths, but this is easily averted by careful observation. Patients who are at first opposed to these procedures soon come to enjoy them. Dr. Dent urges that more attention be given the use of water in the treatment of the insane.

7. Medico-Legal Phases of the Vermont Observation Law for Criminal Insane.—"An act authorizing persons indicted for offenses or committed to jail on a charge therefore, whose plea is insanity, be ordered into the custody of the Vermont State Hospital for Insane, to be there detained until the further order of the judge, so that the truth or falsity of such plea may be ascertained. (Vt. Statutes, Acts of the 15th Biennial Session.)" Statistics are given from various sources showing that quite a large percentage of those convicted of crime were insane at the time of its perpetration; the difference between the legal and medical acceptation of insanity is set forth, as well as several cases of individuals cited, who were charged with crime and under observation were found to be insane and others malin-This method of procedure does away with the discrepancies in expert evidence. The writer sums up the advantages of such a law in the following words: "This statute stands as a thoroughly conservative and preeminently rational mode of procedure, which from a distinct financial point of view saves the State the usual expense in expert witness fees and lessens the liability of a retrial. It gives the prisoner a careful and impartial medical and physical examination and endeavors to establish a result, which like a final qualitative and quantitative analysis, has been arrived at, through many observations and tests, that owing to the diligence and accuracy with which they have been made, must be infinitely more trustworthy, fair and impartial than would be possible with any set of opinions which have been given from hypothetical questions or the usual short interview. Irresponsible persons are therefore less liable to be convicted. This law is an effectual

damper upon the too frequent plea of insanity, since the State shows itself

determined to elicit the bona fide character of the plea."

8. The Possible Influence of Rational Conversation on the Insane.— A form of psychical treatment that has been found of benefit in some convalescents with periods of depression and excitement, or when the disease insight has just manifested itself and then acts as a support to the patient's own ideas, further, has a diverting influence on the patient's own morbid ideation, but otherwise nothing new is offered that is not the daily experience and mode of procedure of every trained alienist.

McCorn (Amityville).

ARCHIVES DE NEUROLOGIE.

(Vol. 14, 1902, No. 83, November.)

1. The Pathogenesis of Fundamental Delusional Ideas, Imperative Conceptions and Obsessions, their Affinities to Insane Delusions. A. Paris.

2. Insanity, Communicated and Simultaneous. GUIARD AND DE CLERAM-

3. Moral Idiocy and Particularly of Lying as a Symptom of that Mental

Type. BOURNEVILLE AND BOYER

1. The Pathogenesis of Fundamental De'usional Ideas.—The author states his conclusions founded upon the case of a married woman, thirty-seven years of age. Four pregnancies, last child eight years old. Character emotional, very impressionable; intelligence limited. No important information as to family antecedents, but heredity attested by symptomatology. Manner of living poor; condition one of poverty. No alcoholism. She became a victim of extreme fear of assassination, refused food, manifested more anxiety for her children than for herself and ended by taking them to a neighboring river to drown them with herself. She thought she was accused of crimes and protested her innocence; finally she came to think that perhaps it was in her sleep that she committed the acts of which she was convinced that people accused her, though she did not hear them utter the accusations. She then did her best not to sleep and begged that she might be left without sleep. Later in her history she refused food, stating as a reason that she had no stomach, lungs, etc. This delusion, the author thinks, she derived from a fellow patient in the dormitory. On her separation from this patient she freely accepted her food. The author claims that this case "gives evidence, in a way particularly remarkable, on the side of the preponderating rôle of heredity, of original nervous constitution. of insane (Maudsley) temperament in a melancholic, in the genesis of the idea of culpability, the influence of obsession in insane delusion." The case shows, he thinks, "as clearly as possible that the idea of culpability has its inception, mainly, as a consequence of the tendency in some sort innate in the melancholic to self-accusation and shows how the obsession intervenes to produce the formal affirmation, the fixation of the idea of culpability." "It is very evident." he says, "that the ideas of culpability are not simply the consequence of ideas of persecution." "Why, if the rôle of the original defect was not the principal one, if the idea of culpability did not exist previously in, so to speak, a latent state in her, would she not be drawn, like the primary paranoiac, to protest solely to the contrary against the persecutions of which she is the object, and try to demonstrate them unjust, instead of striving, while protesting against them, to establish that she merits them." He states that the ideas of culpability do not arise from hallucinations of hearing, because she did not hear the accusations made, she judged from the gestures and attitudes of the persons about her. "Deductive reasoning has but an insignificant part in the idea of culpability." "It

is evidently the original defect which gives the orientation of the delusion, the obsession, the consequence itself of that defect." The influence of the surroundings of the patient merits a certain attention, since it might have mischievous consequences, as the patient's refusal to take nourishment evidently shows. The author thinks that it is "by attempting to distinguish the delusional ideas, which proceed essentially from the original defect, that we shall come to establish finally a rational classification of insanities properly, of mental defects not attaching themselves to any physical affection, and to determine finally the evolution of each." "After what we have seen in the patient, we cannot conclude that because ideas of persecution appear at first more marked and conspicuous, they are the ones which cause the idea of culpability, but, as I interpret them, they contribute to facilitate their genesis and evolution, the idea of culpability pre-existing in a latent state and thus constituting one of the fundamental elements of the melancholia character prior to the mental alienation. So that, also in the melancholic called the delusion of persecution, the idea of culpability will be moreover, in spite of appearances, a fundamental idea." "The character clearly obsessive of the phenomena which preside at the evolution of the idea of culpability, the intensity, the standing in relief of idea of persecution and the facility with which our patient adopts the delusional ideas of one of her companions, bring me, in conflict with most classic works, to consider the delusion of persecution, or melancholia,

as a variety of degeneracy.

2. Insanity Communicated and Simultaneous.—There are two cases commented upon. In the first the facts are as follows: the patients are three sisters residing in Paris. They were under the delusion of persecution, said that the crowd in the street cried out: "See them"; called them beavers, monks, the Salvation Army, the Three Sleepers, etc. To avoid persecution they first took up a nomadic life in hotels, remaining in each sometimes two weeks, sometimes one, and sometimes only for a single night. They had an income of five hundred francs a month sent to them. For two months they continued the hotel life, and then. to avoid sleeping on benches, they took up their lodging in public hacks. At midnight they would engage a cab by the hour and drive around in it until eight o'clock in the morning. The three occupied the one seat, one sitting in each corner and the younger sitting between the two. They slept well, one, however, by turns keeping watch, and escaped persecution. They made their toilet in the public chalets, ate dry bread, drank at the fountains, passed as much time as possible in churches and museums, and sometimes even walked twelve to fifteen hours a day, and on New Year day, when it rained, they remained standing under portes cocheres. The expense per night was, they said, from sixteen to fifty francs. They spent in some months twelve thou-After an altercation with a cabman, who caused some excitement in the street, they were taken to the Special Infirmary. The sister Annette seemed the controlling spirit. She died at the Infirmary from bacillary infection (not tuberculous). Upon her death the other sisters improved and appeared to be losing their delusions. The authors claim that the delusion had been attacked at its source by change in the environment of the patients and by partial isolation, which had been instituted. Case II.—Insanity communicated from mother to son. Psychosis of long standing in the mother. Transmission to son of maternal delusion. Genesis in son of second psychosis independent of the first. The mother of the age of sixty-two years was brought to the Infirmary on March 25. 1902. Her volubility, multitude of ideas, of reasons, of proofs indicated a delirium of long standing. She was married at twenty to a mechanic; became a widow; at twenty-six married a park keeper. She

adored him and before marriage wrote him several letters each day. For a time her happiness was perfect, then came the war, the siege and her husband, sent out one day to bear dispatches, disappeared, shot by the enemy or drowned in the Seine: it was never known. She remained a widow and was compensated by a bureau de tabac and a small pension, and lived in Paris with her three sons. Two died while still young. Her grief, the mystery which surrounded the death of her husband, an event which had greatly shocked her, revived her former love of writing on topics social and philosophic. She wrote the "Drama of my Life" and the "Planetes Rocheuse" and became possessed of the delusion that people were trying to seize her writings and enrich themselves by their sale, and Flammarion had plagiarized them. She lived very retired, her pension and shop bringing her but 1500 francs a year, and she expended considerable sums in posters proclaiming her wrongs. Her son was brought to the Special Infirmary at the same time. He was of the age of thirty-seven years, artist painter and could sell none of his works. He partook of the delusions of his mother, had various original ones about Dreyfus and the Transvaal war, that people spoke evil of him to prevent him gaining his living. He attempted suicide, necessitating his removal to the Infirmary. In résumé, the delusion communicated by the mother to the son had this peculiarity, that that of the son was the reproduction complete and absolutely passive of that of the mother. Then the special delusion of the son

diverging, evolving on its own account upon a soil all prepared.

In the first case the delusion came simultaneously to the three sisters under the influence of the same causes, but the part of each of them in the association is not equal. The younger is manifestly the most active, the most suspicious. Her mind is always strained and distrustful and it is clear that she leads in the delusion, the two others play a more subordinate rôle. In the second case the delusion is communicated by a mother to her son, a being weak and subjugated; he is quite truly insane and one should not declare that he will be restored to reason, the gravity of the prognosis being drawn from the soil upon which the psychosis has been developed. One sees that ideas of persecution play the principal rôle in these two cases; it is in effect the rule. The idea of persecution develops itself easily in an environment of depressing conditions of all sorts, and above all from poverty, and folic-a-deux is especially the lot of the unhappy; one understands, without its being necessary to insist upon it, that two unfortunates, ruined by privations in identical conditions exceptionally favorable to build up in common a delusion of persecution, or to consider as true a delusion of that kind engendered solely by one of them. We may then conclude that the division into folie communicated and folie simultaneous is legitimate and corresponds to the reality of fact. Useful for grouping in nosography, it presents still this very appreciable advantage in psychiatry and precise terminology. If it does not always accommodate itself to the diversity of the clinic, for here as elsewhere, there are some intermediary cases. We should not forget besides, according to the first remark of Laseque and Felret "that it deals with one of the forms of alienation, intermediary between reason and insanity, and which exempt from marked physical troubles, only lend a psychological analysis. cases naturally derive from the malady an aspect quite peculiar and resem-

ble rather studies of manners than medical observations."

3. Moral Idiocy and in Particular of Lying.—This is a new observation relative to lying by children attainted by moral idiocy, which completes in divers respects those published by Bourneville and Boyer in the Archives, 1902, No. 76. The authors set forth in considerable detail an account of the accusation by a girl of fourteen against her father, charging him with violation of her person. She was proven thief and liar. An examination showed the hymen intact. Her hereditary taint is sufficiently

manifest. Father has violent headaches with vertigo; paternal grandfather alcoholic, epileptic, demented, died in hospital; mother affected with cardiac troubles and probably exophthalmic goiter. We have a case of moral idiocy characterized by the perversion of the instinct of veracity and of that of property (lies and thefts). If she had not made up a lie out of whole cloth, she had put an interpretation consciously false upon acts little reprehensible in themselves. The genesis of this monstrous lie was in part explained by the imprudence of the father, who lived with a mistress, who had become alcoholic and lived from prostitution. The authors show the danger of accepting too literally the testimony of a child. Under medico-pedagogic treatment she notably improved. She manifested a desire to become a nurse; attempts to that end having failed, she was placed as a domestic in a family of the middle class, where so far she had been perfectly well behaved.

RICHARDS (Amityville).

(Vol. 14, 1902, No. 84. December.)

I. Obsessions in Mental Pathology. ATHANASSIO.

2. Insane Automutilator. Poirson. I. Obsessions in Mental Pathology.—A foot-note states this article was a paper presented to the Academy of Medicine and that it received "mention honorable au Prix Civrieux." The author contributes a treatise on the subject of obsessions, of which 16 pages are given in this number and of which there will be a continuation in one or more subsequent numbers. It is not very capable of abstraction, except in the sense of stating the points discussed. He first furnishes a definition of obsession from the pathological point of view. According to Magnan "obsession is a mode of cerebral action in which a word, a thought, an image imposes itself upon the mind, in spite of the will, but without distress in the normal state; with a painful anxiety, on the contrary, which renders it irresistible in a pathological state." Our author gives the different names under which it is described, as emotional delirium, mania without delusion, monomania, fixed ideas, imperative conceptions, uncoercible ideas, abortive delusion, rudimentary paranoia and obsedant ideas. Classification by Regis: (1) The state of diffused anxiety or panophobia; (2) The state of systemized anxiety or monophobia; (3) The state of anxious idea or monoïdeic. Freud admits rudimentary attacks of anxiety, which may produce: (1) The respiratory type; (2) The cardiac type; (3) The sweating type; (4) The trembling type; (5) The type of voracious eating; (6) The diarrhea type and of frequent urination; (7) The vasomotor attack; (8) The paresthetic attack; (9) Pavor nocturnus; (10) Vertigo. The author discusses monophobias or phobias properly so-called and obsession properly so-called. "The nature of the ideas of obsession are eminently variable. Among 250 cases of well-defined obsession, Regis found especially: the obsession of being insane, of itch, syphilis, cancer, apoplexy, sudden death, pathological softening, general paresis, a foreign body in the ear, microbes, contact of physicians, heart disease, blenorrhagia, madness, vertigo, aphasia, verbal amnesia, ataxia, fainting, pregnancy, etc., etc., the religious and scrupulous obsession, with its infinite varieties (anxious idea not to touch a person or thing having been in contact with the consecrated wafer, in particular priests and those who take communion, for fear of moral pollution, and the obligation to wash constantly the hands as in the obsession of physical contamination)." "The most common of all these obsessions are those of a religious form. The patients wish to pray, to make a confession, then comes to them a blasphemy, an impiety, a sacrilege, a gross insult in thought or in speech. At other times the subjects are constrained to contradict themselves, to say just the contrary of that which they think or of that which they would wish." "Regis and Pitres give as a

general character of obsessions: to produce themselves in the morning on awakening, at the passing of the dream life, accompanied most often by the momentary forgetfulness of their moral torture, at the reappearance of real life, this being with many, as with a number of neurasthenics, the worst moment of the day. Others are taken every evening at nightfall with distressing paroxysms." "Sleep is more or less good. Sometimes the obsession has no repercussion upon itself, at other times it occurs in the dream." "In all cases, in the intervals of the crises, when they are not too intense, the subjects are able to pursue their calling. Habitually they conceal their state of mind and concentrate themselves on themselves, even avoiding speaking of it to their nearest friends. It is only when they are at the end of the strife or too much tormented that they confide in the physician, obtaining in that confession, as do neurasthenics, a temporary relief." Regis classes obsessions as constitutional and accidental. first with hereditary taint are precocious, the intellectual element predominates, they have a mode of conduct remittent or continuous, are chronic; the obsedent idea is multiple or may modify itself. With heredity less strong, mainly in the point of view of insanity, the onset more tardy, the preponderance of the occasional cause, the production of a phase of phobia, the persistance to a marked degree of emotional phenomena, the conduct always unstable, in fine, its curability are the characteristics which belong

chiefly to accidental obsession. (To be continued.)

2. Insane Auto-Mutilator.—Poirson discusses the mental state of the patient and also the pathological incidents which supervened in the course of the malady, whilst the subject was at the asylum of Mareville. He first considers the pathological incidents. The patient was thirty-seven years old on admission to the asylum. He was a glazier and day laborer, married, and the father of three children. He was reported as maniacal, jealous, violent. He had delusions of persecution and saw and heard a Six months after admission the discovery was made of virgin in white. a swelling of the cellular tissue over the left pectoralis major. The swelling has a small opening in the center from which flows an extremely fetid pus and of a blackish color. An incision and cleaning produce besides a large amount of pus, a match, the lead of a pencil 5-6 cm. in length and a fragment of the wood of a pencil. In spite of careful attention, the swelling extended in every way. It was diffused over all of the left thorax with large blebs. It caused marked general debility. The treatment consisted in putting to bed, multiple incisions, drainage, irrigation, antiseptic dressings. Two weeks later the purulent discharge, very abundant till then, diminished a little and in the course of the next month the swelling healed and cicatrized in the superior part. Below an oozing of pus and serum continued. The general condition became satisfactory at that time. Later another tumefaction appeared at the level of the upper third of the sternum. An incision was made; pus and serum were discharged and at each inspiration air entered by the wound and at expiration a mixture of pus and serum was discharged of frothy form at the cutaneous orifice. A year after the swelling above described had healed the patient presented a temperature of 39° C. The third and fourth day auscultation revealed tubular breathing of muffled timbre on the left side; percussion of the lungs negative, as well as of the precordial region. The pulse normal at first, but became weaker, then thready, almost imperceptible the last two days. The patient's unfavorable symptoms appeared on April 6th and he died on the 16th. The symptoms observed did not permit the diagnosis of pneumonia, yet the autopsy disclosed that it was a pneumonia, which should have been the diagnosis. The signs given by the percussion, etc., were negative, because of the localization of the disease in the center of the lung. As to temperature pericarditis explains the abnormal character of the temperature during the pneumonia. There was moreover found

in the left lobe of the liver on its upper surface a pin without head, implanted in the hepatic tissue. The liver of normal size, but had the aspect and yellow color of infectious and cachetic degeneration. As to the patient's mental state, indicated by his self-mutilation, "under what inspiration did he act and what was his object?" No satisfactory replies were obtained from him. "Auto-mutilators most often obey their delusional ideas. Some wish to punish themselves for crimes they believe they have committed, others think to escape from persecutions; sometimes they are simply the result of despair, often the motives are incomprehensible. "In our patient by reason of his delusion, essentially polymorphic and in absence of all indications, the exciting cause is alone known to us, i.e., blunting of sensation." "In that state did T. perhaps obey a voice? Did he wish to deliver himself from some evil spirits within him? Did he wish to punish himself for some faults, of which he believed himself culpable? As to the efficient cause of his mutilation we make any of these suppositions.

RICHARDS (Amityville, L. I.)

NOUVELLE ICONOGRAPHIE DE LA SALPETRIERE.

(15th year, 1902, No. 6. November-December.)

I. On the Affections of the Cauda Equina and of the Inferior Segment of the Spinal Cord. F. RAYMOND.

2. Syphilitic Lesions of the Nerve Centers. Hemiasynergia, Lateropropulsion and Bulbar Myosis with Hemianesthesia and Crossed Hemiplegia. BABINSKI AND NAGEOTTE.

3. The Historical Lesions of the Cortex in the Atrophies of the Cerebellum. LANNOIS AND PAVIOT.

4. The Protoplasmic Prolongations of the Nerve Cells of the Horns of the Spinal Cord in the New-Born. Soukhanoff and Czarnieck.

5. Gigantism and Infantilism. Launois and Pierre Roy.

6. The "Paotred ar Zabat" Breton Legends. Ducrest de Villeneuve.
7. Giants in Art. Henry Meige.
(1) Affections of Cauda Equina.—This is a further study of the inferior segment of the spinal cord, which has of late been the subject of several communications by Raymond. The cauda equina includes the total number of nerve roots which arise from the lumbar enlargement and from the conus terminalis, and the fibers which go to form the sacral and sacrococcygeal plexus. At the present time the term "affections of the cauda equina" is applied to pathological cases which are distinguished by the partial or total integrity of the sensory motor functions of the inferior extremities which are innervated by the lumbar plexus. To assume that a morbid process affects the total number of roots of the cauda equina, it is necessary to include, among the other symptoms which may be present, a total sensory and motor paralysis of the inferior extremities. The location of the lesion, whether nuclear or radicular, is of great im-Three cases are quoted to illustrate the diagnostic principles which are to be drawn upon in localizing the lesion.

Case 1.—Woman, aged thirty years. Two years before, without any known cause, other than fatigue due to the patient's profession, she became the subject of violent pains extending to the buttocks and thighs. They became more intense on the left than on the right and followed in general the distribution of the sciatic nerve. Difficulty in locomotion soon followed, and bladder incontinence with retention soon developed. Progressive atrophy of the muscles, more marked on the left than on the right, disappearance of tendon reflexes, and an anesthetic area which at first occupied the internal aspect of the buttock on either side, soon made their appearance. The plantar surface of the left foot and the extension of the area of anesthesia to the posterior surface of the leg completed the

picture. The seat of the lesion was believed to be in the nerve roots composing the cauda equina and not in the cord segment which gave rise to them, for these reasons: The excentric direction in which the violent pains were propagated, the unequal intensity of the pain on one side as compared to the other, and the bladder disturbances. Raymond believes this to be a neuritis, implicating the nerve roots and produced by the fatigue which the profession of the patient caused. The patient was a mechanic by profession. The prognosis of the neuritic variety is more favorable than that of the nuclear.

Case 2.—A man thirty-eight years old, alcoholic. Paresthesia of the left lower extremity, followed by a motor paresis, developed after ex-

posure to cold; incontinence. Four months afterward the condition was as follows: motor paresis very pronounced of the muscles of the posterior aspect of the thigh; the leg muscles and the left foot. Atrophy and R. D. in the region supplied by the external popliteal branch of the sciatic. Abolition of the tendo Achillis reflex. Intermittent pains along the sciatic region; anesthesia of the left half of the scrotum, penis, perineum, and of the adjacent buttock territory and of the thigh, in the form of a band, the size of which diminishes gradually from top to bottom. The anesthesia extends to the external portion of the dorsal aspect of the foot; abolition of anal reflex, suppression of erection. The diagnosis of a neuritis of the nerve roots of the cauda equina, with a relatively favorable prognosis was made.

Case 3.-Man, age twenty-eight, motor paralysis of the left lower extremity, atrophy of the muscles of the posterior aspect of the thigh and of the calf, with a lowering of the local temperature in these regions. The knee jerk and the Achilles reflex abolished. On account of the acute onset of these symptoms, with temperature, and the sudden paralysis of both extremities, followed by a permanent paresis of the left one, the rapid appearance of atrophy, the coldness of the extremity, the disappearance of both tendon reflexes, led the author to make the diagnosis of hematomyelia, or rather of a hemorrhagic poliomyelitis limited to the anterior column of the spinal cord segment which gives rise to the nerve

roots which form the sacrococcygeal plexus.

2. Syphilitic Lesions of Nerve Centers.—Babinski and Nageotte presented to the Neurological Society at Paris, April, 1902, a description from a clinical point of view of a disease closely allied to a unilateral bulbar lesion. Three cases formed the basis of this communication. The essential features were hemiplegia, hemianesthesia on the side opposite to the lesion, hemiasynergia, lateropropulsion, and myosis on the same side as the lesion. One of these cases came to autopsy, and this paper is given up to a further study of this disease, especially from the anatomical point of view. A man fifty years old, syphilitically infected at the age of thirty, was attacked suddenly while in perfect health with hemiasynergia limited to the inferior left extremity, lateropropulsion towards the left, slight tremor of the upper extremities, a moderate degree of hemiplegia and anesthesia on the right, difficulty of deglutition and slight narrowing of the left pupil. Twelve days after the attack the patient died and the autopsy showed the presence of arterial syphilitic lesions and diffuse meningitis with multiple foci of softening located in the left half of the medulla, From these clinical and anatomical data, the authors have felt justified in drawing certain deductions relative to the mode of development of syphilitic affections in general and to the relation which exists between the observed symptoms and the localization of the morbid processes as determined by microscopic examination. Some of these deductions are the following: Generalized meningeal lesions appear to be the rule in a nervous syphilis during the process of evolution whatever its form may be, whether tabes, general paralysis, or multiple lesions of the brain and cord. These lesions constitute in some way the foundations upon which are based the further developing lesions characteristic of every form of syphilis of the nervous system. The lymphocytosis which is found in the cerebrospinal fluid preceding the appearance of the meningeal symptoms, appears very early. It accompanies the first symptom of nervous syphilis and may be its only manifestation. In consequence, a meningitis appears to be the first stage of any lesion of the nervous system which is the seat of a syphilitic infection. Syphilitic meningitis bears a close resemblance to tubercular meningitis from the histological point of view. The differentiation is to be made by the presence of a less discrete cellular infiltration and the absence of true caseation in the former as compared with the latter. The authors, however, confess that the distinction cannot always be made. In the case here described the diffuse arterial lesions have determined the areas of softening in the medulla, upon which the symptoms depend. The lesions caused the following interruptions in the nerve tracts: (1) An interruption of the olive-ciliary pathway of both sides. The cells of the inferior olivary bodies of the medulla are not in connection by means of their axis cylinders with the cells of the cerebellar olive and of the nucleus emboliformis; (2) An interruption of the descending path which connects the nucleus of Deiters on the left (perhaps the left hemisphere of the cerebellum), with the left side of the medulla; (3) An interruption of a portion of the fibers of the fillet; (4) An interruption of the lateral ascending paths of the cord (Gowers' column), with a conservation of the direct cerebellar tract, probably; (5) A lesion of the longitudinal posterior tract, left, with a descending degeneration; (6) Destruction of mixed nerves on the left side over a certain extent; (7) A slight lesion of the left

3. Histology in Atrophy of Cerebellum.—In 1901 the authors, Lannois and Paviot, made a preliminary communication to the Society of Medical Sciences in Lyons in which they showed that, in certain cases of atrophy of the cerebellum, the cells of Purkinje and the cells of the molecular layer were found absent and a new layer of cells appeared in their place, which had not yet been described by histologists. They decided that these cells were present in the normal cerebellum lying between the molecular and granular layers, above the layer of the cells of Purkinje, and that they could be identified with the large cells described by Cajal, Golgi, Bechterew, and called by Dejerine large cells of type II of Golgi. They have been able to study three additional cases of cerebellar disease which throw light on this subject. They are here reported, together with the results of the anatomical studies. Case 1.—Cerebellar syndrome with muscular asynergia of the trunk and extremities. Cerebellar atrophy apparently limited to the base, a subcerebellar pseudo-cyst. Chronic diffuse meningitis. Case 2.— Epilepsy. Attacks very frequent, with a sensory aura. No loss of consciousness. Atrophy of the left lobe of the cerebellum. Case 3.—Spasmodic infantile atrophy on the right. Epilepsy. Cerebral sclerosis of the left hemisphere, with crossed atrophy of the cerebellum. In these three observations of primary or secondary atrophy of the cerebellum a lesion has been found which, to all appearances, is absolutely characteristic. The lesion appears in the convolutions of the cerebellar cortex. The Purkinje cells disappear absolutely without leaving the least vestige of degenerative cell bodies in the process of destruction. The cells are either normal or are not seen at all. At the same time the granular layer lessens, then disappears, and shows by the Nissl stain no trace of cell structure. Together with the double disappearance of the normal cell layers of the cerebellum, there appears outside of the granular layer, and sharply separated from it, a layer of oval and pale cells which have a nucleus of chromatin and from one to two nucleoli, which are very deeply stained. This new layer does not give the impression of having been newly formed. It seems to

have existed before under the Purkinje cells and those of the granular layer, and it only comes into evidence with the disappearance of the two former. That this layer has not been before recognized is due chiefly to the method of staining used, as in the Weigert-Pal preparations it appears very faintly. Thomas and Dejerine have probably seen them, judging from the description which is found in their well-known work, Le Cervelet, 1897, but they failed to give to them any great importance. The following conclusions end the article: (1) There is no histological difference between the cortex of the cerebellum, which is primarily atrophied and one which is secondarily atrophied; (2) In the process of atrophy there becomes isolated invariably a layer which corresponds probably to the cells which lie between the granular and the molecular layer (cells of Type II, Golgi). The molecular layer atrophies at the same time that the cells of Purkinje and the granular cells disappear. The disappearance of the cells of Purkinje is total and absolute and precedes all other changes in the atrophic process. The frequently occurring secondary nature of the atrophies shows that one should not consider cerebellar syndrome as being always the type of the primary lesion of the cerebellum.

4. Nerve Cells in Horn or Spinal Cord.—In a previous communication Le Nevraxe, (see Jan., 1903, No., Journal Nervous and Mental Disease), the authors of this article have demonstrated the possibility of using the chrome-silver method in the study of the adult spinal cord. They made sections in a longitudinal direction parallel to the central canal. In this way they were able to study with great accuracy the protoplasmic prolongations of the nerve cells. The present paper is concerned with the appearance of these prolongations in the cells of the anterior and posterior horns in the cords of newborn infants. Their method is as follows: Small pieces of cord were cut in half in a dorso-ventrical direction and placed in a chromeosmic mixture for four days. The specimens were then placed for two or three days in a 2 per cent. solution of silver nitrate to which was then added osmic acid. Some of their results were as follows: There exists a very marked difference between the aspect of the protoplasmic prolongations of the cells of the anterior and those of the posterior horns. In the former the dendrites are more regular and come off more at right angles. They are also very poor in collaterals. In the posterior horns the dendrites are short, more ramified, their contour is less regular, and they

are richer in collaterals of a varying form.

5. Gigantism and Infantilism.—Launois and P. Roy say that gigantism and infantilism are two anomalies of evolution which, at first sight, appear to be so different that any attempt to bring them into the same category would seem impossible. A relation between them was suggested by the study of some cases scattered in the literature and by the observation of a case upon which this article is based. The case here reported is that of a man of large stature, measuring in height two meters and four mm. Various stigmata of infantilism can be demonstrated. The man continues to grow, although he has reached the age of thirty years. A careful description is given, together with measurements, photographs, and radiographs. Other cases are cited, and from the data thus obtained these conclusions are reached: (1) There exists a type of infantile gigantism in which large stature coexists with genital atrophy, or at least with impotency and sterility, facts which have been noted among giants; (2) This type of infantile gigantism, especially in regard to the continuity of growth (persistence of cartilaginous union), to the manner of this growth (increase in length of extremities and especially of the inferior extremities), and in regard to its anomalies (genu valgum), is not always perhaps to be considered as belonging to the type of acromegalic gigantism (large body, hypertrophy of the extremities, deformity of the inferior maxilla, etc.), because the retardation in the ossification of the epiphyseal cartilages

and the hypertrophy of the hypophysis are common to both; (3) It remains to be determined the part that the pituitary hypertrophy plays in this production of abnormal growth. In this regard the examination of the hypophysis in eunuchs and in animals which have been castrated early in life, can perhaps furnish us with the desired information.

6 and 7.—Articles of literary interest solely.

SIDNEY I. SCHWAB (St. Louis).

MISCELLANY.

TREATMENT OF GRAVES' DISEASE. E. Schultes (Münch med. Woch., May 20, 1902.)

The author has made a series of investigations on the action of a serum obtained from sheep or dogs from which the thyroids have been removed, following the initial suggestion of Baller and Enriquez. He reports the case of a woman forty-nine years of age who had had exophthalmic goiter four years. Palpitation, anxiety and delirium were prominent symptoms. The exophthalmos was marked, the thyroid much enlarged, circumference of neck being 17 inches. The initial dosage of this new body, prepared by Merck and termed antithyroidin, was gm. 0.5 (7.5 grs.). This was increased until she was taking gm. 4.5 (70 grs.) three times a day. After two weeks her delirium was markedly improved, the pulse rate has dropped to 100, the circumference of the neck diminished almost an inch. A week later the pulse rate was 88. The thyroid was softer and the patient was able to attend to light work, such as sewing from which she had been deprived by reason of the marked tremor. After seven weeks she was sufficiently better to be termed well.

NEURASTHENIA. Joseph M. Aiken (Medical News, Nov. 29, 1902.)

Neurasthenia is a primary affection of the nervous system, especially common in individuals with hereditary defects. The unstable constitution is a neurasthenic in latency, needing only some shock, moral or physical to develop neurasthenic symptoms. Diminished dynamic energy, and lessened recuperative power in nervous structures is the chief pathological condition. Impaired metabolism with accumulation of waste products, which in turn accumulating in the blood, give rise to auto-intoxication, especially affecting the nervous system. Deficiency, never loss of function and fatigue, are common symptoms, but no loss of sensation. Headache is never absent, or pains in the back or limbs. Diminished sexual, visual or digestive power are common. Mentally, weakness or irritability are common

Treatment should be hygienic, dietetic and medicinal; with special stress on strange environment, careful hydrotherapy, sleep, exercise and diet strictly regulated by the physician. Hypnotism still farther exhausts weakened nerve power. Water should be given freely, except at meal times, often hot.

W. B. NOYES.

Symmetrical Gangrene (Raynaud's) versus Endarteritis Obliterans James Dudley Morgan. (The Journal of the American Medical Association, Nov. 29, 1902.)

The smaller blood vessels seem to be affected first in Raynaud's disease. They have more muscular tissue in their middle coats, and are thus more capable of active changes in caliber, and this muscular tissue is under control of sympathetic nerves, which nerves are controlled by sympathetic nerves, which nerves are controlled through their center in the spinal cord. Friedländer's disease, or obliterating endarteritis, generally shows neuritis. Raynaud's gangrene may occur without neuritis. There is an abnormal excitability of the vasomotor centers in the spinal cord, producing a spasm of the vessels. True Raynaud's disease is rare. It should not include cases with proliferation of cells of the intima. Both diseases

occur frequently in middle life. Syphilis is not a special cause of Raynaud's disease. Valvular defects, congenital narrowing of the aorta and arteries are not infrequent causes. There is a similarity between hemoglobinuria and Raynaud's disease in that exposure to cold produces attacks. Heredity is found in 8 per cent. of the cases. A history of exposure to cold, rheumatism, malaria, or tuberculosis is at times found. quently other disturbances of the nervous system, such as hysteria, organic nervous disease, or insanity. A case of Dehio proves that Raynaud's disease can occur as an independent and typical disease in persons otherwise healthy. A healthy woman developed it after a severe fright. The vessels showed a fibrous endarteritis and endophlebitis. Senile gangrene is typically unilateral. Glycosuria cases are easily excluded. Erythromelalgia seldom leads to gangrene, is painful and unilateral. Of two cases reported by the writer, the first showed extremely calcareous arteries; the second showed anterior and posterior tibial arteries completely occluded by a growth of connective tissue, continuous with the tunica intima, though different in character. No real thickening of the tunica intima. Smaller vessels, however, showed obliterating endarteritis. But disease of the arteries had not caused the gangrene, which had begun with a simultaneous and acutely sudden onset. Raynaud's disease never causes death. Why it should cease is a mystery. It may be due to a transient toxic, or reflex agent, having itself only an intense but transitory stimulation of the vasomotor center.

WM. B. Noyes.

A CLINIC ON NERVOUS DISEASES. Daniel R. Brower, Rush Medical College (Medical Standard, Dec. 1902).

I. Epilepsy.-A matter of considerable interest is the epileptic habit in old epileptics. If the patient has an aura the habit may be treated with reasonable chance of success by the inhalation of amyl nitrite. For if this is inhaled when the aura appears the fit cannot come on. If the aura is in an extremity, a counterirritant may be sufficient. All epileptics are intensely emotional, so any line of treatment must be accompanied by the positive assurance that it will do good. The author uses bromides in small doses, avoiding bromism, and believing that it is better for the patient to have some seizures and a clear head between, than to be in a state of mental incapacity from bromides all the time. Sodium bromide is less disturbing to the digestion and less likely to cause anemia than the other bromides, but in any case an iron preparation, such as Basham's mixture, should be administered. In almost all epileptics there is a feeble, easily compressed pulse with cardiac insufficiency which may be treated best of all by adonis vernalis. The bromide dosage may be quite small if accompanied by the fluid extracts of horse nettle and of solanum carolinense, zfs-ij (cc. 2.-8.). A laxative pill and an intestinal antiseptic, as salol, may also be considered routine treatment.

2. Tabes Dorsalis.—In the pre-ataxic stage avoid strychnine and pre-scribe rest, moderate doses of opiates, and tonics, preferably phosphorus, from and arsenic. A mild but efficient alterative that does not disturb the stomach is resin guaiac, gr. iij (gm. o. 2.), and chloride of gold and sodium gr. xx (gm. 1. 3), a half hour before meals; another preparation of great value and recommended by Niemeyer is Blaud's pill, one three times a day, with a laxative to overcome the constipating effect of iron. W. A. Bastedo (New York).

OBSESSIONS: FIXED IDEAS, ETC. Theodore Diller. (The Medical News, Nov. 22, 1902).

Obsession includes a group of mental symptoms more or less allied, occurring in various psychical states, which have been called by various writers fixed ideas, impulsions, abulias, imperative conceptions and phobias. They are held to be expressions of neurasthenia, though not exclusively so, many being more closely associated with melancholia, hysteria, epilepsy, or physiological degeneration, while some seem to occur in individuals otherwise normal. Obsessions may be of five classes: (1) Of doubt; (2) of fear; (3) of impulse; (4) of miscellaneous ideas; (5)

abulias. Chemical histories of 17 cases were given:

Case II, suicidal obsession, which finally caused patient to be sent to an asylum. Case III, hypochondriacal obsession, an imagined condition of "fermented stools." Case IV, the fear of definite or general personal danger, in a subject with stigmata of degeneration. Case V, fear of public speaking. Case VI, stuttering when tired or bored with any subject. Case VII, obsession of impending danger, with constant mental depression. Case VIII, believed he constantly smelt of feces. Case IX, believed lice were on her head. Several other cases had obsessions associated with masturbation. The treatment should be directed towards maintaining the physical tone, and impressing the individual mentality. The drug treatment should be as simple as possible.

HEREDITARY SYPHILITIC TABES DORSALIS. Babinski. (Soc. Med. des Hopi-

taux, Oct. 24, 1902.)

This observer, in discussing the question of hereditary syphilitic tabes dorsalis, said that there are in literature 20 well-authenticated reports of this condition. He thinks that the disease exists more commonly than is generally supposed, probably because it is usually present in a more or less masked form. For this reason he begged to present the histories of two such cases. The father of each of them was himself a tabetic. The first case was a young woman, twenty-two years of age, presenting the teeth of Hutchinson, who up to his eighteenth year had enjoyed good health, excepting that at her birth she presented ulcers around the anus, and that during her seventh year she was seized with convulsive tic. In her seventh year she presented interstitial keratitis, with all the characteristics of hereditary syphilis. During the past two years she has been a victim of crises of pain, and her pupils are not active to light. Further, it is to be noted that the father of this poor patient contracted syphilis while her mother was pregnant with her, and thus herself, became contaminated. The father at present presents the characteristic signs of tabes dorsalis, namely, abolition of the reflexes at the knee and ankle, irritability of the bladder and lightning pains and the Argyll-Robertson The other patient was a fifteen-year-old girl whose pupils were insusceptible to light, whose reflexes at the knee and ankle were abolished, whose bladder was showing symptoms, who had a choroiditis on the left side of syphilitic character, and, finally, whose cephalorachidian fluid disclosed lymphocytosis. The woman also presented mental disorders pointing toward an early dementia, perhaps due to a meningo-encephalitis of uncertain distribution. Her father was the victim of tabes dorsalis, precisely like the father of the foregoing case. The recognition of facts like these are of really practical value, because it is already admitted that treatment with mercury, energetic and persevering, may exercise upon these hereditary syphilities a curative effect no less active than in acquired tabes, that is to say, that it may delay in a fixed measure the progress of the disease. JELLIFFE.

RELATION OF CONSCIOUSNESS TO THE NERVOUS SYSTEM. Alex. E. Gibson.

(Medical Record, Nov. 22, 1902).

The nervous system is two-fold—cerebrospinal and sympathetic; the former related to the instinctive or psychic processes, the latter to the vegetative or vital, while both are mainly below the sphere of self-consciousness. The sympathetic nervous system carries on its functions with-

out the necessity of cerebrospinal interference and is responsible for the rhythmic movements characteristic to the functions or tissues it supplies. Embryology teaches that the sympathetic system is an outgrowth of the cerebrospinal. Every functional activity of the body is a type of the mechanical principle of the lever notably such activities of unstriped muscle as the pyloric valve, the heart, or sweat glands. It follows that two factors must be present: the protoplasmic storage batteries of vital force, and an elaborate system of conductors. The nervous system holds bodily tissues in a state of constant tension. The evolution of self-consciousness as manifested in a human being is sui generis and not demonstrable as a product of functional or structural operation. Self-consciousness seems to be superimposed on the whole biological output of the evolutionary processes. No process of evolution can be traced as in the evolution of the sympathetic as an outgrowth from the cerebrospinal system. cerebrospinal system, while controlling the sympathetic, is itself operating under the cover of instinctive consciousness and below the reach of individual self-consciousness. The individual has in his charge a mechanism over which, to a large extent, he has no control. The basis of vegetative life as represented in the smooth, non-striated, spindle-shaped, "involuntary" muscle cell, which receives the innervation of the sympathetic nerve, has a common significance to man and animal. This is true also of the striated muscle cell, innervated by cerebrospinal nerves. In the cranial structures in the cerebral cortex the anatomical distinction between animal and plant arises, and as this is chiefly self-consciousness, it is logical to associate self-consciousness with an advanced evolution of the unique, non-demonstrable functions of the cortex. These unexplored regions of the cortex may form the structural basis for the self-conscious existence. W. B. Noyes.

Perforating Ulcer of Foot. E. Tomasczewsk (Münch. med. Woch.,

May 13, 1902).

It has been the observation of this writer that ulcer of the foot occurs when sensibility is intact and no trauma exerted on the feet. cers of the feet are well known to resemble each other irrespective of cause, in their form, development and course, and are generally found to occur where the most pressure is exerted. They are preceded by a hyperkeratosis, exerting still more pressure, which leads to circulus vitiosus. The observance of these general conditions has led to the usually accepted hypothesis that a decrease of sensibility in the part affected had caused the patient to pass over the fact that pressure was being exerted by an ill-fitting shoe or other cause. The author, however, advances by an ill-fitting shoe or other cause. The author, however, advances the theory that an isolated sclerosis of the plantar arteries is largely responsible, as there is often little bleeding during operation, and an absence of pulsation. He has also noted that ulcers seldom occur on the heel, which is supplied by blood vessels of a larger caliber than the rest of the foot. In such diseases as diabetes, syphilis and various nervous disturbances arteriosclerosis is a common lesion, frequently most developed in the parts farthest from the heart. It is not clearly evident whether any trophoneurotic disturbances are at work or not, as the exist-ence of trophic nerve end centers is still unsettled. Degeneration of the nerves which supply the part affected has been shown, however, and these also occur in cachectic individuals without ulcers, or in cases where ulcers are artificially produced. If an examination of the urine does not reveal sugar and the anterior and posterior tibial pulses are negative, then it is well to take a complete nervous status, as the ulcers may very likely prove a subjective manifestation of cerebral, spinal or peripheral disease. JELLIFFE.

Book Reviews

A PRACTICAL MANUAL OF INSANITY FOR THE MEDICAL STUDENT AND GEN-ERAL PRACTITIONER. By DANIEL R. BROWER, A.M., M.D., LL.D. Professor of Nervous and Mental Diseases in Rush Medical College, etc., and Henry M. Bannister, A.M., M.D. W. B. Saunders and Com-

pany, New York, Philadelphia and London.

In the preparation of this manual the authors have considered before other things two requirements. They have appreciated the needs of the untaught student for sound, readable and yet authentic fundamentals which, augmented by subsequent observation and reflection. will fit him for the recognition of disordered mental states, and secondly, they would place in the hands of the general practitioner some work of ready reference that would be of service in his daily round.

The purposes here outlined have been most admirably carried out. The opening chapter on "definition" is a most excellent one, and presents the subject in a thoroughly modern and common sense fashion. Recognizing the necessities for some sort of definition for the sake of legal terminology alone, if may be, the authors, after giving the many reasons why insanity is incapable of definition by any terse series of generalized statements, offer the following: "Insanity is a more or less permanent disease or derangement of the brain, producing disordered action of the mind in such a manner as to put the subject in a condition varying from his normal self and out of relation with his environment, in general, "in such a way as to render him dangerous or inconvenient to himself or to others.

For legal requirements this definition may be considered satisfactory, but the authors recognize its vagueness and incompleteness from the medical point of view. They do not attempt a medical definition which we believe should be done with the distinct statement that insanity legally and medically requires different view-points and should not necessarily be brought into correlation; furthermore the necessity of considering insanity not as a single entity, but a vast horde of conditions at times entirely unrelated save in their essential feature of an affection of a single complex bodily organ, needs to be brought out more clearly than we here find it.

If there is any general criticism that we would offer it would lie along this line, that the authors have generalized too widely in their chapters on etiology and pathology, believing that it is better to clearly differentiate certain groups of insanities and show their essential etiological and pathological factors. At the present time we do not speak of the pathology of lung diseases, but sharply differentiate, different groups of these affections with allied etiological and pathological fea-We believe that the careful studies of the insanities that have been made during the past decade allow similar dividing lines to be made and the group containing the paranoias has very sharp dissimilarities, not only clinically but etiologically and pathologically from dementia paralytica and its congeners. In the study of the different types of insanity the authors have made this very clear, however, and their characterizations of the different symptom groups is most admirably done.

The chapter on classification is philosophical and interesting. It analyzes the various systems now in vogue and sums up their essentials

very judiciously. The arrangements of Ziehen and of Kraepelin are given first place, the former as the most logical psychological system,

the latter as one of the most useful for present day students.

The major portion of the book is devoted to the description of the various insane symptom groups. These are sharply outlined and form a very decided addition to the descriptive literature of these very heterologous symptoms, making the work a very commendable one and a distinct addition to our psychiatric literature. JELLIFFE.

Leçons sur les maladies du système nerveux. Année 1897-1898. Par F. RAYMOND, Professeur de Clinique des Maladies nerveuses à la

Faculté de Médécine de Paris, Médecin de la Salpêtrière.

This is the fourth volume of an annual series of clinical lectures delivered by Prof. Raymond at the Salpêtrière, collected and published by

Dr. E. Ricklin.

The following is a list of the cases presented and discussed: Tumors of the Rolandic Area, Infantile Multiple Sclerosis, Alternate Paralysis, Polioencephalitis, Sclerosis, Double Ophthalmoplegia in Tabes, Asthenic Bulbar Palsy, Hemiplegia with Atrophy, Progressive Muscular Atrophy, Nosology of the Muscular Atrophies, Muscular Atrophy in a Tabetic, Tabes and Syringomyelia, Lead-Palsy and Syringomyelia, Case of Syphilitic Polyneuritis or Mercurial Polyneuritis, Case of Polyneuritis or Poliomyelitis, Traumatic Hysteria, Hallucinations of the Stump after Amputation. Case of Juvenile General Paralysis of the Insane or Central Syphilis, Myoclonia, Myxedema.

The lectures open with the history and results of the physical examination of the patient. The differential diagnosis then receives minute attention, each symptom being carefully weighed and then carefully in-

terpreted.

The diagnosis having been made, reference is made to the literature and the prevailing ideas held by other well known observers. Prognosis and treatment then complete the lecture.

As these are clinical studies only without autopsical confirmation of the diagnosis, their chief value is to the student and the teacher.

To the latter, however, because of the great clearness of presentation, the ease of diction, the masterly disentanglement of complicating and confusing symptoms and the sound clinical sense and judgment displayed, these lessons should serve as a model and a guide.

J. RAMSEY HUNT (New York).

LES TICS ET LEUR TRAITEMENT. By HENRY MEIGE et E. FEINDEL. Preface by M. le Dr. P. Brissaud. Masson et Cie, Paris, France. G. E. Stechert, New York.

The senior author particularly has been interested in the study of tics and allied convulsive disorders, and has published a long series of noteworthy contributions during the past ten years. The work, which is some 633 pages, comes therefore with an authority of long and

careful observation.

In the introductory preface Brissaud speaks of the desirability of recognizing the word tic as a most useful one, and dwells on the greater precision in meaning that it has acquired by reason of the authors' presentation. Recognizing the large rôle of the psychological element in the genesis of tics the authors open their discussion with a lengthy chapter on the "confidances of a tiquer," giving in great detail the entire mental history of an educated and well trained observer who suffered from a gradually developing "tic." "Son of a tiquer, brother of a tiquer, father of a tiquer, himself a tiquer, M. O... is the prototype of a tiquer." Such is the striking opening of this unraveling of a mental

life of a patient bearing particularly on the subject of his affection. The history gives a characteristic summary of the entire clinical picture.

Following this chapter the authors present a historical critique summarizing most fully the gradual development of the neurological

trend in the study of this condition.

In their pathogenic study special emphasis is laid on the differences in types of muscular contractions and the delimitations of the words spasm, tic, convulsive and spasmodic are carefully drawn. They follow the usage of Charcot and Brissaud in applying the word "spasm" to a motor reaction due to a pathological irritation at some point in the bulbo-spinal arc, to be a "tic," it is necessary that the cerebral cortex shall have participated. In further differentiation those motor reactions, inclusive with tics, in which the cortex is involved, the degree of coördination and of purposeful action is a most important element. Thus they say that the tic movement is a coördinated one, it is further systematic and finally it has a definite object or genetically has had at one time such an object.

Tics then are considered as tempestuous functional movements representing an act commanded by an exaggerated desire, and in which the resultant satisfaction of the movement may be still present or may have lost all significance, the impulsive habit alone remaining as a para-

sitic function as it were.

Successive chapters are on the Mental State, Etiology, Pathological Anatomy, on which subject the authors can offer nothing save their thought that there is an acquired lesion, based on some congenital anomaly, arrest or vice of development of the cortical association tracts, or of their infracortical association fibers, perhaps minute modifications not now recognizable in the present unsatisfactory state of technic.

Further chapters are on Studies on Motor Reactions. Accessory Symptoms, Tics of Special Muscle Groups, Tics of Writing, Tics of Speech, Evolution of Tics. An interesting chapter is on Gestures and Antagonistic Stratagems, a subject rarely thought of by many observers. Diagnosis, Distinctive Features, and Treatment are the concluding chapters.

The work is truly a most interesting and important one and destined to introduce a greater definiteness into our conceptions of the convulsive disorders in general. It is of the best style of the French writers, clear cut and practical, and merits a wide recognition.

JELLIFFE.

Mews and Motes

Docent Dr. H. Schlesinger has been appointed Professor at Vienna.

Prof. von Krafft Ebing has recently died at his home in Graz of chronic nephritis.

Dr. Alexander Pilcz has been appointed privat docent at the University of Vienna.

Dr. G. B. Pellizi has received the appointment of privat docent in the University of Modena.

COLUMBIA UNIVERSITY will inaugurate a summer course in medicine in 1903. Drs. Pearce Bailey and R. Cunningham will be instructors in neurology.

Review of Neurology and Psychiatry is the title of a new monthly Review editted by Dr. Alexander Bruce of Edinburgh. This Review is to provide in English a journal similar in character to the shorter Reviews and Centralblätter published in French, German and Italian. The editor says that the Review is in no way intended to trench upon the field already occupied by the various larger British and American journals of nervous and mental disease.

This first number is a very commendable one and augurs success to the enterprise. We presented a résumé of its original articles in last

month's issue and will analyze the February issue in April.

The Bulletin, a quarterly medical review which has been published since 1892 by the American Medical Temperance Association, has been consolidated with the Journal of Inebriety. The latter journal, which first appeared in 1876 under the editorial care of Dr. T. D. Crothers of Hartford, Ct., was the first and is still the only medical periodical in the world devoted exclusively to the scientific study of the neuroses and psychosis of spirit and drug diseases. ("Der Alcoholismus" excepted. Ed.)

American Medico-Psychological Association.—In accordance with a resolution passed at the Richmond meeting in 1900, the American Medico-Psychological Association has become affiliated with the Congress of American Physicians and Surgeons, and is now a constituent member of that body. Under the by-laws of the Congress it is required to hold a meeting every third year in Washington. This being the year for such meeting, the council has instructed the secretary to announce that the Association will meet in Washington instead of Providence. The dates for the Congress are May 12, 13, and 14, and the Association will continue in session on the 15th. Members of the American Medico-Psychological Association will receive programs from the general Secretary and announcements from the Committee of Arrangements of the Congress. The profit and pleasure of the meeting will be very much enhanced by the new affiliation. Sessions of this Association will be so arranged as not to conflict with the program for the general meeting. Some of the titles sent are as follows: Treatment of Morphine Habits by Hyoscine, by Dr. J. M. Buchanan; Report of a Case of Cerebral Lues, by Dr. J. E. Courtney; Dementia Præcox, by Dr. A. R. Defendorf; Report of a Case: Was He a Paranoiac? By Dr. C. A. Drew; The Toxemic Basis of Certain Brain Diseases, by Dr. W. E. Dold; Some Observations on the Insane: Blood Pressure, by Dr. W. R. Dunton, Jr.; Blood Conditions of the Insane, by Dr. H. C. Eyman; Psychology of Epilepsy, by Dr. Everett Flood;

Delusions, Hallucinations, and Illusions of the Pudic Nerve, Cerebrospinal Areas, by Dr. C. H. Hughes; An Epidemic of Typhoid Fever Due to Impure Ice, by Dr. R. H. Hutchings; The Physiological Demands in Hospital Food Supply, by Dr. W. H. Kidder; Insanity in the Negro, by Dr. J. F. Miller; Paranoid Dementia, by Dr. C. W. Page; Drill for Patients, by Dr. G. A. Smith; How Dr. Brigham Met the Challenge to Diagnose Insanity at Sight, by Dr. Stephen Smith; Pathology of Acute Delirium, by Dr. H. A. Tomlinson; The Paranoic Forms of Manic-depressive Insanity, by Aug. Hoch, M.D.

A symposium on the subject of Trauma and Insanity is contemplated. Papers are also promised by Dr. H. E. Allison, Dr. G. A. Blumer, Dr. A. E. Brownrigg, Dr. H. C. Baldwin, Dr. L. L. Bryant, Dr. Edward Cowles, Dr. J. B. Chapin, Dr. E. P. Chagnon, Dr. Edward French, Dr. G. H. Hill, Dr. Robert B. Lamb, Dr. P. L. Murphy, Dr. I. H. Neff, Dr. A. B. Richardson, Dr. B. T. Sanborn, Dr. W. P. Spratling, Dr. G. G. Wagner.

Dr. F. M. Powell of Glenwood, Iowa, has been reappointed superintendent of the Institute for Feeble-minded Children.

Dr. William Maßon, formerly of Ogdensburg, took up his new duties as superintendent of Bellevue, Fordham and Gouverneur Hospitals, January 1, 1903.

The Last annual report of the London County Council shows that the increase in insanity for the year was greater than any other year excepting 1896. There was a total population of 22,155 under the care of the asylum committee January 1, 1902. The new asylum opened March last for the accommodation of two thousand patients is already filled, in part by transfer from other overcrowded asylums. The committee has already under consideration the necessity of proceeding with the construction of another building in order to provide for the estimated increase of five hundred per annum. At the present rate a population of half a million insane will be under care by the end of the present century. The chief causes alleged in the yearly etiological tables are herediary predisposition 27 per cent., and alcoholic excesses 17 per cent., both of which are thought to be much greater were the taking of more accurate data possible.

Dr. Liebeault, of Nancy, returned to the town of Favières where he was born seventy-nine years ago, to spend his birthday. His friends seized the occasion to place a commemorative tablet on the house where he was born. It states that A. A. Liebeault opened a new era in the medical sciences by his discovery of the systematic application of suggestion and induced sleep in the treatment of insomnia. He is the founder and leader of the so-called Nancy school. The inscription is signed by Voisin, Berillion and other members of the Paris Société d'Hypnotisme et de Psychologie, and by leading psycho-therapeutists of Germany, Sweden, Holland, and also by Vogt and Forel of the Zeitschrift für Hypnotismus.

THE

Journal

OF

Nervous and Mental Disease

Original Articles.

REVERSALS OF HABITUAL MOTIONS, BACKWARD PRONUN-CIATION OF WORDS, LIP WHISPERING OF THE INSANE, SUDDEN FAILURES OF VOLITION, REPETITION IMPULSES.¹

By S. Weir Mitchell, M.D., L.L.D., Edin., of Philadelphia.

The present paper contains brief records of several forms of mental disorder. Some of these are too rare to be of much value, but are not without interest; others are unusual examples of well known abnormal conditions. That which I shall first describe as a very uncommon symptom of a diseased brain I do not find elsewhere mentioned. I am a little in doubt how to label the symptom. I must content myself with calling the phenomena Reversals.

These assumed two forms in the first case seen by me. The opposite of the thing willed was done, or else what it was meant to do was done, in a way which reversed the usual manner of doing it. The patient, a man in mid life, was an officer of the navy, of healthy descent, and unbroken health. Mentally he was very competent, but was what I should call anxious-minded, a man who put a needless amount of work into all he did. He first suffered after a time of unusual strain during the war of the rebellion. No warnings preceded the primary symptoms. He described himself as at this time exhausted in mind and body. When on

¹Read before the Philadelphia Neurological Society, Dec. 23, 1902.

the landing of a staircase intending to go up the next flight of stairs, instead of doing so, he found himself going down the flight he had just ascended, and going down backward. After descending a few steps he had the sense of mental shock, which all wholesome-minded men would experience under such conditions, and went up the stairs as usual although with some incomprehensible difficulty. Thereafter, at long intervals, and when overworked, this reversal happened. In the street if the action of walking suddenly ceased to be automatic, and he recalled the fact that he was walking, he would sometimes walk backward a few steps, and finally recovering himself, would go on as before. After a while he had great difficulty in ascending the stairs in the usual way, and was practically unable without effort to go up stairs foremost. When he was alone he was apt to go up backward, and generally, if not watched, descended the stairs in the same way. By and by this peculiarity began to be troublesome. He would go to a door to unlock it and would find himself making an effort to lock it. I had at one time notes of this interesting case, and have mislaid them. I do not think the peculiarity went much farther, and I believe he continued to be a man of mental value in all the ordinary affairs of life. I may add that during the years of this peculiarity he served in the war with distinction.

Another curious case of the same kind was a middle-aged lady who had the not rare habit of turning to look at the end of a book before she began to read it in the usual way. At length, as she assured me, the habit became so fixed that she was positively unable to read a book in the normal manner until she had read a few pages at the end. Upon discovering that she was unable to resist the temptation, and that to continue to go backward through the book was hard to resist, she became greatly alarmed. She made earnest efforts to conquer, but I think never entirely overcame this curious difficulty, which she characterized as "the child of an over-indulged habit of curiosity to know how the book ended." Persistent effort to read in the usual way caused flushes and slight mental confusion, to which she usually yielded so far as to obtain relief.

Another case of still greater interest was that of a woman about fifty years of age, who had arterial degeneration, insufficient

renal excretions, and attacks of mental disorder. These attacks in the opinion of the physicians who saw her, were caused by uremic conditions. In this case there was at times for hours a tendency to reverse actions, to put on her drawers over the head, or the undershirt over the feet, to put the shoes on the hands, or the gloves on the feet.

These curious reversals of habitual acts occurred only during the period when she was not in normal relations with the world, and of them she had no after-remembrance. In the intervals, although her mind might be said to be enfeebled, she preserved the excellent memory of a very well read woman, and was interesting, and not otherwise mentally disordered. This case occurred some years ago and was seen by me only in consultation, so that I have no notes except those imperfect ones which my own memory preserves.

A somewhat similar case, which I saw in consultation, occurred later in this city. The reversals were not as perfect nor as interesting as the one which I have just described.

I have seen, however, of late, a more notable example, the details of which I am not at liberty to give in full. The patient was a distinguished officer worn out in service. There were slight traces of albumin in the urine, with very insufficient excretions. He had a variety of morbid mental conditions, sometimes emotional weakness, but rarely delusions; sometimes slight explosions of anger and always difficulty in walking from general feebleness of the legs. At any time if left alone he would put on his drawers over his head, or his night jacket over his feet, and although he had a slight paralysis of the left side, he constantly used his crippled left hand where it would be usual to employ the right. Thus, instead of holding his knife in his right hand, he held it in his left hand. In place of starting with his right foot to walk, he put out first his left foot. He put on his left shoe first and his right glove first, both unusual ways with him, and with most of us. His shoes he put on his hands and at times tried to put his gloves on his feet. When the bath was prepared he sometimes made an effort to get into it head down in place of stepping into it, and had to be watched.

Another curious and interesting case, affecting speech, seems to resemble those which I have so briefly described. It was seen

by me some years ago in the person of a dentist. He was subject to periodic headaches of extreme intensity. They occupied the left side of the head and were apt to last for a day or two, and to result in distinct paresis of his right hand, and in disturbance of language unlike anything I have ever seen. At times after the headache reached great intensity he either talked what seemed to be a jargon, which no one could understand, or else exhibited the following peculiarity of language. It affected chiefly the nouns. It is common enough to hear aphasic patients say "house" for "barn," "dog" for "cat," "road" for "path." Closely related substantives or ideas are employed. This person, however, used words which seemed to be in meaning the reverse of what he meant. In place of saving he would remain in-doors, he would say, "I will remain out of doors," when he meant "in-doors." If he wanted to say, "It is a clear day," he would say exactly the opposite. On one occasion he was made very angry by the incapacity of his wife to understand that when he said, "I do not want whiskey and water for dinner," he meant he did want them. It was interesting to observe that when in this condition, and it usually came toward the close of an attack of headache, he was perfectly well aware of his difficulty, and often refrained for long periods from expressing himself rather than cause the selfannovance such speech was sure to produce. His headaches increased in intensity until he occasionally fell into a semi-comatose condition, or had a brief period of delirium lasting for some hours. With change of climate and occupation he entirely recovered his health, and lost both his headaches and these singular reversals of intended statements.

I think that you will agree with me that it is exceedingly difficult with our present knowledge to explain some of these singularities. I may add that the headaches were usually caused by any extreme fatigue; were not gouty, or due to eye troubles, and first arose after an attack of malarial fever at Panama.

Still harder is it to theorize on the following case. It stands alone in my large experience, and was seen by me when I was a student of medicine. An accomplished and scholarly gentleman was very ill with what we should early recognize today as a tumor of the brain. It was so diagnosed late in the disease, and proved after death to be a large soft cancer of the left anterior lobe of

the brain. This patient was for a long while in bed suffering great anguish, with usually a condition of stupor, and with now and then a few hours of apparent clearness, during which he spoke what appeared to be a sort of gibberish. I was asked to sit up with him several nights, and, as the case interested me very much, I began to observe that what he said often consisted of repetitions. Having nothing else to do, after a couple of nights I began to amuse myself by trying to put down on paper what he said. An often repeated sound struck me as being "dog ho." This was repeated over and over. Then he would say, "Tac-im tacim," and with this was then evident a desire for something which his wife could not understand. A great list of things was named without avail, until at last she recalled that his great household pet was a very beautiful cat, and when this was brought he exhibited pleasure and seemed satisfied. Suddenly it occurred to me that he had said backward what he had wanted: that "tacim" was "my cat." The moment this idea presented itself to me I began to look over some of the notes I had made of his talk and found other illustrations which satisfied me of the correctness of my interpretation. For instance, "dog, ho" was "Oh, God." There were many other words capable of being thus used, but a large part of his very rapid output of language I could not understand. I comprehended it well enough, however, to perceive that when he came to use words incapable of clear backward pronunciation he mumbled over them, but every now and then fell upon some word that could be rendered backward, like "God," or "dog," or "cat."

I am perfectly clear that this speech was of the nature I describe. When I related my little discovery to Dr. William Pepper, the father of the late provost, who was in attendance on the case, he seemed to think it impossible; but when my father, who was also consulted, heard about it, I was able to satisfy him that I was correct. Neither of them had ever seen or heard of such a case, and it stands alone today in my not small experience.

I desire, secondly, to speak of the habit many of the insane exhibit of moving their lips when engaged in thinking. They have no wish to speak, but either do whisper or make lip and tongue movements too feeble to be heard as speech. This is a common symptom in people who for years remain on the border-

line of insanity, sometimes near it, at others across it. Uneducated persons are seen to move the lips when reading to themselves. I make mention of this fact only to point out that these acts are examples of what are not altogether abnormal movements.

In fact, all efforts to mentally repeat remembered series of words without audible speech cause movements of the speech organs, of which we are unconscious. To prove this Dr. Scripture, of Yale, uses a thin membrane covering one side of a small cup. This is placed back of the teeth, and so that the membrane is in contact with the tip of the tongue. On the side of the cup is an opening connected by a tube to an ordinary drumhead carrying a lever which plays on the blackened cylinder of a kymographion. The subject, who does not know what is expected to occur, is asked to sit still and not to think speech. The result is a nearly straight line on the moving cylinder. Then he is asked to repeat verse or prose mentally without making any sound. At once the recording needle becomes agitated, and an irregular line results. Evidently the tongue has represented in minute motions that which was being repeated without sound.

The line between habit and obsessions is very narrow, and disliking the term obsessions I prefer to describe that I now deal with as despotic habits. How far they are despotic depends on temperament, mental state and previous duration of the habit. I cannot class them as always neurasthenic symptoms. They may sometimes be a part of the many phenomena of asthenic mental states, but they may also exist in vast variety in the healthy, or vary in intensity with mental health. They may be today mere controllable habits, and at another time despotically beyond volitional rule.

Some of the minor and harmless obsessions arise out of too long indulgence in habits of thought or action, the origin of which seems far to find. Thus, many wholesome people yield, as we all know, at times to a tendency to tread on alternate stones in walking; others resolve that to go to a certain place shall exact so many steps and no more. There is some faint satisfaction when it comes out as pre-desired, and if it fail, some mild dissatisfaction. Perhaps most of you have felt these tendencies.

One should watch all such valueless habits, since they may in the end become masterful. Even in persons of great intellect these habitual ways may become despotic. The healthy, as I have said, find a certain comfort in yielding. The sensitive and emotional, or those who live in perilous nearness to the boundary of unsoundness of mind, are so moved by not giving way to a morbid habit, as to suffer until, by yielding, they obtain relief such as any one who has tic, or habit spasm, obtains by ceasing to inhibit the abnormal muscular acts.

When by long habit some mental process has been connected with a form of physical movement, to break the relation may interfere with an associated intellectual activity.

Here is a curious illustration. When I was a boy at the Academy, under a severe master, the classes stood for recitation. Very soon boys thus placed sway, the whole line moving rhythmically from right to left and back again. For some reason, or whim, the master ordered this habitual motion to cease, and threatened punishment for disobedience. He discovered however that obedience caused a certain amount of mental failure, and at last, confessing as much, ceased to interfere.

The greater number of the oddest of these despotic acts seem traceable to no such innocent habit and are as inexplicable as facial tic, and of no related or other value. It would seem, in fact, as if deliberate ingenuity must have been needed to invent some of these acts, so strange are they and so complex.

Many of them are in some way related to numbers, like that recently reported to you by Dr. John K. Mitchell, where a queer hostility to the number three existed.

Perhaps no case more curious can be found than that of Samuel Johnson, as told by Boswell. No doubt it has been often quoted.

He was a prodigious worker, had some irregular movements which were analogous to habit chorea, and was subject to attacks of profound melancholy. Of his obsessions Boswell speaks thus:

"About this time he was afflicted with a very severe return of the hypochondriac disorder which was ever lurking about him. He was so ill, as, notwithstanding his remarkable love of company, to be entirely averse to society, the most fatal symptom of that malady. Dr. Adams told me that, as an old friend, he was admitted to visit him, and that he found him in a deplorable state, sighing, groaning, talking to himself and restlessly walking from room to room. He then used this emphatical expression of the misery which he felt: 'I would consent to have a limb amputated to recover my spirits.'

"Talking to himself was, indeed, one of his singularities ever since I knew him. I was certain that he was frequently uttering pious ejaculations; for fragments of the Lord's Prayer have been distinctly heard.

"He had another peculiarity of which none of his friends ever ventured to ask an explanation. It appeared to me some superstitious habit, which he had contracted early, and from which he had never called upon his reason to disentangle him. This was his anxious care to go out or in at a door or passage, by a certain number of steps from a certain point, or at least so as that either his right or his left foot (I am not certain which) should constantly make the first active movement when he came close to the door or passage. Thus I conjecture; for I have, upon innumerable occasions, observed him suddenly stop, and then seem to count his steps with deep earnestness; and when he had neglected or gone wrong in this sort of magical movement I have seen him go back again, put himself in a proper posture to begin the ceremony, and, having gone through it, break from his abstraction, walk briskly on, and join his companion.

"A strange instance of something of this nature, even when on horseback, happened when he was in the Isle of Skye. Sir Joshua Reynolds has observed him to go a good way about, rather than cross a particular alley in Leicester Fields; but this Sir Joshua imputed to his having had some disagreeable recollection associated with it."

The horseback incident here above alluded to I found with difficulty in Boswell's second volume. Johnson was seen when on horseback to turn suddenly and ride back a short distance with no apparent object. He rejoined his friends without making any explanation. Boswell regarded it as only another instance of the peculiarity already described.

There is one very rare form of mental difficulty which I do not find recorded in the books. I hesitate to give it a name. It consists in a suddenly acquired incapacity to do, not a certain class of things, but one particular thing. I know of two very sane and very intelligent persons who are thus troubled; one, a

lady, writes many letters. Once in a year or two she finds herself unable to answer some single, and by no means unusual, letter. If she persists, she misspells words, gets the wrong words; as another puts it, is "word-crazy." Then a day comes when she tranquilly writes the letter. A member of her family had a similar annoyance which beset him variously. Once in New York he found himself unable to pack his valise. He went away; returned the next day, again failed, and finally called up a hotel servant to do the simple thing he could not do. The family is not neurotic.

The obsessions of childhood appear so far to have escaped study. In my own home one brother, in later days an army officer of distinction, had, as a child, a great dread of feathers, and of all fluffy objects. A bunch of cotton, or a feather, laid on the lintel of an open door kept him an easy captive. He could not pass over it or by it. Another brother, who also served in the Civil War as Colonel, would not, when young, go out of doors without an umbrella. This lasted for some years from the age of ten. How it ended I do not recall.

The following case is briefly reported as an example of great variety of despotic ideas:

Mrs. S. S., of Kansas City: Family history negative, never robust as a child. Married at twenty years. Tertian malaria at twenty-four years. At twenty-six years second child was born. Very severe labor and great shock to her nerves. A few months after, while sitting with the baby asleep in her lap one night, she was suddenly seized with a desire to cut the child's throat. She bolted the door of the room in alarm, lest she should get the knife which was in the next room. From this time for two years she was continually tortured by strong impulses to kill the child. At times she had suicidal thoughts. The same impulses returned to her after birth of third child, having been left alone with the child one evening. This time the impulse remained until her fourth pregnancy was established, when it left, not to return until several weeks after her delivery. This time it was brought on by two telegrams announcing her brother's death. Prior to this time she never had the homicidal feeling when with a third person. Now she had it all the time. Her age at this date was twentyseven.

Her impulse to kill her children and herself remained up to her fiftieth year, although it became very much less and she had long intermissions of normal mentality. She became very nervous as years went by, and twice resorted to a sanitarium. While she was in a health resort, and at fifty years of age, her obsessions changed absolutely. She developed the despotic need when doing minor acts to repeat them with unchanging numerical relation to the person she happened to think of at the time. Thus she lifts a book and must do it three times for a cousin, six for her husband, nine for some one else.

I give herewith the repetition and other impulses in the order of their development.

(1) She looked frequently in her water-pitcher, because if she did not there would be a snake in it. (2) She had to leave the house in "certain way" or else she could not "deliver her mind of the impulse," and must needs do it over and over again until she did it to her liking. (3) When making a call she would have to move a table or chair a few inches before she left. (4) While walking she had to step either on each crack in the pavement, or else over each crack. (5) She began to repeat very many actions in every day life six times (once each for father, mother, two sisters, one brother, and herself). This would apply to things like taking off shoes, combing hair, putting on articles of clothing, carrying a glass to her mouth, etc. (6) While out driving she would have to count six windows in each house. This, after a few weeks, began to reduplicate in multiples of six (i.e., 12, 18 and even 24). She thought if she failed in this she would kill some one or else commit suicide. (7) On turning off gas she would have to repeat the operation again and again to be sure it was entirely turned off. (8) Seeing a light under the door one night while in bed she had to get up and rub the door sill with her hand, touching each finger evenly, eighteen times. If she failed she would not sleep. (This obsession only happened once.) (9) In a large closet in her room she must pass her hand all around the wall back of the clothes before she could go to sleep. (10) If there was the least wrinkle in the spread on her bed she could not sleep. (II) She was afraid to look at a locomotive for fear she would throw herself in front of it. (12) She was afraid to leave her seat in the car for fear she would throw herself from the train. (13) She had to brush off her bed every night in order to get off any snake which might be on it. (14) Must brush off bed in order to smooth clothes.

The patient makes this statement in some notes she has made on her case:

At times, as I pass a door I am startled because I can almost see a person vanishing, although I know that no one is there, and I am almost afraid to look that way again because a dead person is so plainly in my mind." . . . "Sometimes I can not go to the bathroom this feeling is so strong."

Her mind was throughout clear. She was an efficient mother, wife, and housekeeper, and a great reader. She says: "I am like two people. I watch one, who is queer and erratic. I am, I think, the other also and am conscious and ashamed of my second self."

She has twice been under the care of Dr. J. K. Mitchell, and twice recovered entirely, being today without trace of her former peculiarities.

A CASE OF MULTIPLE FIBROMATA CONFINED TO THE INTERNAL PLANTAR NERVE.

BY WM. J. TAYLOR, M.D., AND WM. G. SPILLER, M.D.

REMARKS BY DR. WM. J. TAYLOR.

The case which I now report is to me unique and many of its features are of such interest that it seems worthy to be placed on record. I first saw this patient, then a young woman of twenty-seven and a mill-hand, in the autumn of 1888. Her mother was living and well, her father had died from accident, and she had five brothers and sisters all living and well. She had had smallpox when a child, but no other serious disease, and no specific history, nor has she ever had rheumatism. When about sixteen years of age she sprained her left ankle and since then it had always been weak and had a tendency to turn inward. In 1881, or seven years before she was seen by me, she began to suffer from pain and soreness in the sole of the left foot and inner side of the ankle. At first this was noticed only upon pressure, but gradually it grew worse until she could hardly stand upon the foot or sit with the foot in a dependent position. The pain at that time was not so severe on walking, but the foot was only free from pain when she was lying down. For two years before she was first seen, or in 1886, her work had been such as to require a good deal of standing, as she was working in a mill, and this seemed to aggravate the condition. For the past few months this pain had become more localized and was confined to spots along the inner side of the foot and ball of the great toe. After an attack of unusually severe pain the foot would swell and become red, and it would also swell at any time if she sat with the foot in a dependent position.

At this time, October 29, 1888, many small masses could be felt along the inner side and sole of the foot—these masses varied in size from that of a hickory nut to that of a small pea, and followed the distribution of the internal plantar nerve. They were movable, hard, intensely painful to the slightest touch, and some of them seemed to be immediately beneath the skin, while

¹Read before the Philadelphia Neurological Society, Jan. 27, 1903.

two small masses could be felt on the ball of the great toe; in all about ten small masses could be distinctly outlined. At times they became red and inflamed. They were so exquisitely sensitive that the slightest touch would give her agonizing pain—simply drawing the finger lightly across the skin of the sole of the foot would cause her almost to fall off the chair upon which she was sitting. The whole foot and particularly the sole of the foot sweated so, and particularly after any manipulation, that the sweat would stand out in beads all over the skin, and at times dropped to the floor.

On November 1st, 1888, she was operated upon by Dr. William Hunt at the Orthopedic Hospital, where as Assistant Surgeon, I had the opportunity of helping him. Thirteen small tumors were removed from along the line of the distribution of the internal plantar nerve. These masses varied in size from that of a hickory nut down to a very small pea. They were shelled out from beneath the skin with the greatest ease, having very slight attachments. They were quite firm and hard in consistency and contained no fluid when cut open, but showed simply a white and glistening surface; one or two of the larger ones seemed to be composed of three or four small ones together. Following this operation she had quite a period of comfort, but at no time was she entirely free from pain.

In 1890 she was readmitted to the hospital under my care, stating that she had been much better for about a year after the first operation, but the pain had returned and was quite as severe as ever. I now operated and removed two tumors, one at the instep and the other at the ball of the great toe. Following this she had a period of comfort, but was readmitted in 1897 when I again operated and removed six tumors of the same general character and from the same region, one the size of a marble from in front of the tendo Achillis, and above the level of the ankle joint; again she was relieved. These tumors were pronounced to be pseudo-neuromata by Dr. Guiteras. All manner of medication was tried-iodine, tonics, iodide of potassium, different types of apparatus, bandages—in fact everything possible that could be suggested, was experimented with. During this time the pain recurred, varying in intensity, but of such a character that she was obliged to give up her occupation, that of a mill-hand, as she could not stand on her feet. There seemed to be a reproduction of the small tumors which increased in number and grew in size until June, 1902, when she was again admitted to the hospital, stating that the pain was of such a character that she could not possibly stand it any longer. The foot was now intensely sensitive—four or five tumors could be distinctly outlined—the slightest touch even to the skin over one of these tumors caused intense pain and profuse sweating of the foot.

On June 13th, 1902, I operated, making a long incision over the posterior tibial nerve just above the internal malleolus, and extending it down along the distribution of the internal plantar nerve, quite eight inches in length. Five small tumors were found along the course of this nerve and were removed; one large tumor was found deep down in the sole of the foot beneath the dense fascia, and it was only distinctly located by its extreme sensitiveness. Even when she was under the influence of ether pressure would cause her to wince. This tumor was especially large, about the size of a small walnut, and was attached to the internal plantar nerve at several points by rather long bands apparently of nerve tissue. The internal plantar nerve was found greatly enlarged, larger than an ordinary lead pencil. In view of her long-standing pain, I exposed and removed about five inches of this greatly swollen nerve, to which were attached several of these tumors. The wound healed without the slightest difficulty and all sensation was gone. For the first time in these many years (14) she was free from pain and although all sensation over a certain area was absent, her joy was very great. Her general health improved to a wonderful degree, and since that time she has been perfectly well and able to resume her work.

As I have stated, this case in my experience is absolutely unique, and Dr. Wm. G. Spiller, who has been kind enough to make microscopical examinations of the specimens, will report the neuropathological conditions.

November 29th, 1902, I examined the condition of the foot and found to be remarkably good. There is no pain whatever on walking, nor standing, nor has she at any time pain. The foot has been weak until very lately, but now it seems to have almost entirely regained its strength. Sensation is perfectly good

in the skin of the sole of the foot, and there is tenderness at only one place in the whole line of the scar, and that is directly at the upper portion about on a level with the cut end of the nerve behind and above the malleolus. I imagine this sensitiveness must be simply at the end of the nerve, for I was not able to go entirely above the point of swelling in the nerve itself. The foot no longer sweats at all. She tells me that she is perfectly well, has great comfort and is able to work steadily.

REMARKS BY DR. WM. G. SPILLER.

The report of a case of multiple fibromata confined to the ulnar nerve was published by Dr. W. W. Keen and myself in May, 1900. In that paper reference was made to the case of Dr. W. J. Taylor, now described at length. In view of the fact that Garrè, in speaking of his case, remarked that the presence of multiple fibromata in the skin of the sole of the foot was very extraordinary, and that v. Recklinghausen emphasized the immunity of this part and of the palm of the hand, it seems strange that in the two cases in which I have been concerned the hand was affected in one and the sole of the foot in the other. In one case the tumors were confined to the ulnar nerve, and in the other to the internal plantar. In Dr. Taylor's case a sprain of the left foot preceded the development of the symptoms of fibromata about four vears, and the ankle after the injury remained weak. This accident may have been the immediate cause of the proliferation of the fibrous tissue in the left internal plantar nerve in a person predisposed to such proliferation. Dr. Keen's patient was a laborer, and trauma possibly aided in the formation of nerve tumors in the palm of the left hand. Trauma alone does not explain this singular process, or else multiple fibromata confined to a single nerve would be common, instead of being a very rare finding. Indeed, they seem to be more uncommon than the generalized neurofibromatosis. In the paper with Dr. Keen I referred also to a case of tumors confined to one nerve, reported by J. K. Mitchell and one by Bowlby.

In some cases heredity plays an important rôle, and members of different generations in the same family have exhibited neurofibromatosis. (Menke, Herczel, Bruns, Czerny.) It is impossible to believe that the process is purely an acquired one, and even in the cases in which the tumors have been confined to one nerve

it is probable that the tendency to proliferation exists in other nerves, and that the proliferation may be called forth by trauma, or possibly by disease of the blood vessels. In the specimens sent to me by Dr. Taylor for examination the blood vessels removed with the nerve and tumors are greatly diseased, and the walls of the arteries are much thickened; some vessels indeed are thrombotic and without any lumen. This interference with the nutrition of the nerve may have aided in the production of fibrous



A tumor dependent from the nerve trunk by several bands of fibers.

tissue within the nerve bundles. The tumors are fibromata and contain only such nerve fibers as have not become degenerated by pressure; they therefore are not true neuromata in the sense that proliferation of true nerve tissue has occurred. In amputation neuromata there is a formation of young nerve fibers with the proliferation of fibrous tissue, so that these are truly neurofibromata, but in the specimens I have examined from Dr. Keen's patient and in those from Dr. Taylor's patient the fibrous tissue alone is proliferated.

In one of the small tumors removed by Dr. Taylor which I

have cut lengthwise and examined microscopically, medullated nerve fibers may be seen entering the tumor at one end, and then after entering separating and passing to the periphery of the tumor, and gradually disappearing from view, so that where they become widely separated from one another they can not be traced at all. As in Dr. Keen's case the proliferation has probably begun in the endoneurium of the nerve, and therefore the tumors are somewhat elongated, with their long axes parallel to the nerve. As the perineurium becomes thickened it offers some resistance to further growth of the tumor, and the proliferation of the fibrous tissue occurs more rapidly where resistance is less, viz., at the two ends of the tumor.

The tumors removed by Dr. Taylor, with one exception, are small, as were those removed by Dr. Keen from his patient.

It is easy to discover the cause of the intense pain in these cases. The nerve fibers are pressed upon and irritated by the proliferating connective tissue, and although many nerve fibers degenerate and thus lose the power of conducting painful stimuli, the process is progressive, and new nerve fibers are attacked as those previously diseased disappear.

One tumor, the size of a small walnut, removed by Dr. Taylor, is of peculiar interest, because it is dependent from the large nerve trunk by several thin bands of fibers. These seem on inspection to be bands of connective tissue, but one of these bands cut in microscopical sections consists of nerve fibers embedded in and surrounded by much fibrous tissue. This tumor has evidently grown from several small nerves, or else it has grown from one nerve and surrounded and embedded others within it.

The long duration of the process in Dr. Taylor's case and the repeated operations deserve mention, because removal of these fibrous proliferations of nerves has been regarded by some writers as liable to cause a change from fibrous into sarcomatous tissue. This has not occurred in Dr. Taylor's case.

I have discussed the subject of neurofibromatosis at length in the paper published in collaboration with Dr. Keen in May, 1900, and shortly after the appearance of this paper the excellent monograph on the same subject by Alexis Thomson was published. It is unnecessary therefore to say anything further concerning the specimens from Dr. Taylor's case.

A CASE OF MYASTHENIA GRAVIS COMPLICATED BY ANGIONEUROTIC EDEMA.*

BY THEODORE DILLER, M.D., OF PITTSBURG.

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Myasthenia gravis or asthenic bulbar paralysis is doubtless a rare disease or symptom-complex. Campbell and Bramwell¹ in 1900 were able to collect only sixty cases from the literature; and of these but four cases, those of Collins, Berkley, Sinkler and Punton, were reported by Americans. Oppenheim² in an exhaustive monograph published in the same year gives extracts of all the cases reported up to that time. Appended to each of these monographs is an extensive bibliography. Although only two years have elapsed since Oppenheim wrote the preface to his monograph a considerable number of cases have been recorded in that time.

Among these are one by Freinberg³, six by Frajersztajn⁴, two by Buzzard⁵, one by Buck⁶, one by Batten and Fletcher⁷, one by Frendenthal⁸, one by Paul⁹, one by K. Mendel¹⁰, one by Guastoni e Lombi¹¹, one by Hall¹², one by Leifman¹³, two by Burr and McCarthy¹⁴, two by Jacoby¹⁵, nine by Edwin Bramwell¹⁶, two by Raymond¹⁷, six by Goldflam¹⁸. The last named author expresses his conviction that the disease, or symptom-complex is of more frequent occurrence than true bulbar paralysis.

Thus it will be seen that 38 cases have been reported within the last two years, or more than half as many as have been collected by Oppenheim and Campbell and Bramwell in their monographs.

The cases reported by Burr and McCarthy, Jacoby, Paul and myself make a total published by Americans ten in number. Bramwell's personal observation of nine cases and Goldflam's detailed report of six cases would certainly seem to in-

^{*}A paper read before the Philadelphia Neurological Society, October 28, 1902.

dicate that the disease is much less rare than it was formerly thought to be.

It is not now my intention to discuss the nature of this strange affection, or attempt an analysis of the reported cases, but merely to direct attention to the frequency of its occurrence, and to report briefly a case which is now under my observation. Although I have been able to find records of 38 additional cases reported since the publication of Oppenheim's monograph two years ago, no substantial addition to our knowledge of the disease it seems to me, has been made by their study; or at least enough to justify at this time a re-examination of the whole question as to the pathogenesis of the affection. Oppenheim's monograph may, therefore, be considered as a sufficiently adequate statement of our present knowledge of the disease.

The diagnostic criteria of myasthenia gravis are, according to Oppenheim, these: The combination of incomplete ophthalmoplegia externa with weakness of the hips and extremities; the step-like or slow development of paralytic symptoms affecting chiefly the muscles of mastication and the orbicularis palpebrarum, and the frequent involvement of the muscles of the neck; the pure motor character of the attack; the preponderance of myasthenia over paralysis in the affected muscles; the remittent course; the absence of true muscular atrophy with corresponding electric reactions of degeneration; the long duration of the disease; the frequent presence of myasthenic electric reaction.

My own case is briefly as follows: The patient is a woman aged twenty-nine years who has been married twelve years. She has borne three children, one of whom is dead; no miscarriages. Her mother died at forty-two of heat stroke; her father is living and well at fifty-seven. Three brothers and sisters are dead. No family history of nervous disease or tuberculosis.

The patient had diphtheria as a child, and scarlet fever since her marriage. She is a victim of alcoholism and was brought

to the hospital in a condition of intoxication.

Two years ago she was compelled to take her bed and remain there during a period of five months on account of nervous prostration. During this attack she did not feel sick, nor did she suffer any pain. This "attack" is described rather indefinitely by the patient, but so far as I can gather it seems to have consisted of muscular weakness and general debility. She

states that she was in bed because she was too weak to get up; that when she did so she became rapidly exhausted and was soon compelled to resume her bed again. Yet her symptoms did not seem to be neurasthenic in character. Her recovery from the so-called "attack" was not complete; for although she was able to be about most of the time since her period of five months in bed, she has been more or less tired out and exhausted.

On July 11 last she took a severe cold; and the same night was seized with a chill; and during the next twelve hours she suffered chilly sensations. At nine o'clock the next morning she found great difficulty in articulation; and her speech was well nigh unintelligible to others. This defective articulation has continued up to the present time, being, however, much more pronounced at one time than at another. She has never had any difficulty in swallowing or in mastication. Neither convulsions, mental disturbances nor unconsciousness occurred.

She was admitted to Dr. Griggs' service at St. Francis Hospital, July 14, 1902, with a temperature of 103.8° F. It gradually descended to normal within the next fifteen days, seldom going above 101° F. On July 31 it took a sharp turn upward and on each of the next three days touched 103° F. During the three following days it rapidly declined until it reached the nor-

mal, where it has since remained.

The rise of temperature on July 31 was coincident with the appearance of large circumscribed areas of edema located as follows: Summit of right shoulder, outer side of right upper arm, outer side of right elbow, outer and upper aspect of right forearm, outer crest of right ilium (this was the largest, its area being equal to that of the extended hand), two over outer aspect of right leg. These edematous swellings were circumscribed, non-inflammatory, and very painful. They came rapidly and disappeared rapidly, the period elapsing from the appearance of the first patch until the disappearance of the last patch having been about five days.

I saw the patient for the first time on August 7. Only slight traces of the edema were visible. The patient was free from pain. Mentally she was bright. The face and mucous membranes were pale. Her speech at once attracted attention. It was thick, slurring and indistinct. The face was mask-like; its muscular play during speech being much limited. The pupils responded normally to light and accommodation; the eyegrounds were normal; no ocular palsies were apparent. (The patient stated that for several days about the time of admission, she saw double.) Tested by resistance the facial musculature seemed weaker than normal. The patient chewed and

swallowed without difficulty, but the movements seemed slow. The movement of the soft palate was weak and sluggish. The legs were distinctly weak, but she was able to stand. Her grasp of hands was less than normal—dyn.: R 40; L 30. No tremor; no atrophy.

Sensations for touch, pain and temperature were normal. No dermography. No pain on pressure. Knee and Achilles jerks were sluggish. Skin reflexes sluggish. Thoracic and abdominal organs seemed normal.

During the examination articulation was defective, becoming more and more so, and at the end was scarcely intelligible.

Upon admission the urine showed albumin and granular casts, but these were not discovered in several examinations made afterwards.

Blood examination: (Dr. Disque). August 10. R. B. C., 3,988,000 (average of 150 squares). August 24. R. B. C.,

4,226,000 (average of 150 squares).

Ever since her admission to the hospital great variation in her power of articulation was noted. Speech was usually much clearer after a long period of rest. In general it was better in the morning and grew worse toward night.

August 12—Dr. Nealon notes speech is much worse tonight than at any time since admission. The muscles of mastication tested before and after a meal exhibited no difference in

strength.

August 21—Patient complains that her hands are weak, that

breaking a piece of bread tires them out.

September 23—General improvement has occurred. Articulation is much clearer. Her color is better. She is cheerful, free from pain. Appetite is good; bowels regular. She sleeps well. She expects to leave the hospital within a few days.

(A battery not being available, an electric test to determine the presence of myasthenic reaction could not be made.)

That the case just described is one of myasthenia gravis can, I think, hardly be doubted. The illness of two years ago must, I believe, be accounted as the beginning of the present illness. The diagnosis rests upon the long course of the disease, the weakness of the extremities, of the face and soft palate; the occurrence of diplopia; the absence of sensory and mental symptoms and of atrophy; but above all upon the peculiar speech defect and the fact that it varied greatly in degree, being always much more pronounced after conversation. The relation between angioneurotic edema and myasthenia gravis is a most in-

teresting one; and one which I believe has not heretofore been recorded; and vet one which is difficult to determine since the nature of either affection is unknown. That both were due to the same underlying cause seems, however, probable, and to me a theory of vasomotor lesion seems inviting. Collins¹⁹, from the study of a case reported by him, inclined to the view that the sympathetic was at fault because of the attacks of collapse and cyanosis from which the patient suffered. No other author seems to have offered this suggestion.

I am indebted to my colleague, Dr. Griggs, for the opportunity to study and report this case.

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Society Proceedings

NEW YORK NEUROLOGICAL SOCIETY.

December 2, 1902.

The President, Dr. Joseph Collins, in the chair.

Generalized Scleroderma with Vascular Spasm of the Tongue.-Dr. Joseph Fraenkel presented a girl showing generalized scleroderma and called attention to a peculiar symptom. After the use of the tongue the patient complained of some pain in this organ, and inspection showed a vasomotor spasm leading to the production of an area of whiteness and

dryness on the tongue.

A Case of Congenital Multiple Sclerosis.-Dr. Fraenkel also presented A Case of Congenital Multiple Sciences.—Dr. Fraenkel also presented a girl of seven years. The parents are cousins. Five other children are in the family, and are living and well. One child died in infancy, having apparently suffered from the same disorder as this patient. The child presented was born after an easy and natural labor, but did not walk and talk. The head was small and the eyes had the Mongolian set. Vision and hearing were apparently normal, and the child was docile. Nystagmus was observed on making the little one look upward. The patient was unsale to stand or sit up without assistance and the grit was twiceful attacks. able to stand or sit up without assistance, and the gait was typically ataxic. The speech was defective and somewhat syllabic. There was no actual motor paralysis. There was marked incoördination of the muscles of the upper extremities of the intentional type, more marked on the right side. The reflexes were normal. Both feet were very red in consequence of vasomotor disturbance. The only diagnosis that could be made was congenital multiple sclerosis.

A Case of Subacute Poliomyclitis.—Dr. J. Ramsey Hunt presented a man, thirty-nine years of age, a boiler-maker by occupation. In 1889 there was an initial lesion apparently followed by a mucous patch on the tongue, but he received no internal treatment. Nine years ago he worked for a time in a white lead factory, but developed at that time no symptoms of lead poisoning. His present trouble dated back to last January. The first symptom was a weakness or stiffness of the arms, but he was able to continue at his arduous work of wielding a sledge hammer. Finally, one day he became paralyzed. When seen, five months later, the muscles about the left shoulder were paralyzed, and gave a complete reaction of degeneration while the other muscles were normal. One month later some weakness was experienced on the other side, and this was followed by almost complete paralysis about a week later. There were no electrical changes, but there were fibrillary twitchings. The reaction of degeneration appeared in two or three weeks in those muscles corresponding to injury at Erb's point, but some improvement subsequently took place. The paralysis at the present time had the same localization. There was an exaggerated tendon reflex, but no sensory symptoms were present. The man was under large doses of iodide at the time of the second paralysis.

Dr. Pearce Bailey said that he had seen two similar cases, in which the course was acute and was localized in the shoulder girdle muscles. Both of these patients were syphilitic. He regarded the condition as a localized symbilities myslitic probably associated with hemograpages.

localized syphilitic myelitis, probably associated with hemorrhages.

Dr. B. Sachs said he was disposed to look upon this as a case of specific amyotrophic lateral sclerosis.

Dr. Fraenkel said that it was an old notion that lead paralysis developed in the muscles most used, and this seemed to apply to the case un-

der discussion. He was not willing to entirely exclude lead.

Dr. Joseph Collins presented for Dr. I. Abrahamson a similar case, occurring in a man of forty-eight years, a plumber's helper. He had had syphilis when thirty-six years old, for which he had received treatment for two months. He was well until the last of August, 1902, when he noticed, while wielding a hammer with the left hand, that the left upper extremity was becoming powerless, and from that time to this he had not been able to use this extremity. Two or three weeks afterward he complained of weakness of the right forearm. A few weeks later he noticed that the left shoulder was shrunken. At present there were: (1) Atrophy of the left shoulder muscles, biceps, triceps and forearm muscles, especially the flexors and atrophy to a slighter degree of the flexors of the right forearm; (2) fibrillary twitching of the most atrophied muscles; (3) exaggeration of all the tendon jerks; (4) weakness of the legs; (5) pin-point pupils; (6) no sensory disturbances, and (7) no typical reaction of degeneration in the atrophying muscles. The case was considered to be one of amyotrophic lateral sclerosis on a syphilitic basis. It was not unlikely that the pathological process was a focal syphilitic degeneration of the cervical cord, the ventral horns being principally involved. The primary change was probably in the vessels. Clinically, this case, and the case presented by Dr. Hunt, must be looked upon as amyotrophic lateral sclerosis. Dr. Collins said he referred to this subject to a greater length in his paper about to be read.

Dr. Hunt said he believed his case differed from an amyotrophic lateral sclerosis in its acute onset and course. The onset must have been

accompanied by a great deal of edema.

Escape of Cerebrospinal Fluid Through the Nose.-Dr. Adolf Meyer presented a young man, who in 1894 injured the vertex by diving into water and striking a rock. Since that time there had been increasing severe headache, and in 1897 ocular symptoms appeared. After a while both eyes became blind, the last sector from which vision disappeared being the right upper one of the field of vision. In 1899 he experienced peculiar attacks of numbness on the left side of the face, occurring from ten to fifteen times a day. In August, 1900, there had suddenly appeared an oozing of fluid from the right nostril. This was followed by an improvement in all the symptoms. At the present time there is no facial palsy, but on opening the mouth, the jaw deviates to the right. Several times the patient while suffering from a cold, causing occlusion of the nostrils, had gone into a deep sleep. Last May, without any such occlusion of the nose, there was a general convulsion, and these attacks were repeated this Fall. Some months ago there was a strong tendency to walk in a circle. The speaker said that he had seen the patient soon after the oozing had begun, and then it was possible to demonstrate in the fluid reducing substances. At present, this fluid contained glucose, so that it was undoubtedly cerebrospinal fluid.

Dr. William M. Leszynsky said that he had studied the case reported by Dr. W. Freudenthal. That patient was a lady of about fifty-five years of age, who suffered a good deal from headache. There was a mild optic neuritis affecting both eyes, and the fluid escaped from the nose periodically in large quantities. There was no somnolence, and the patient was chiefly

disturbed by the discharge of fluid.

Dr. B. Sachs said that he had had under observation for four years a girl afflicted with a tumor of the brain, its presence having been demonstrated by trephining. The girl had improved very much, although blindness persisted. For more than a year before there had been periodic oozings from one nostril. Examination proved the fluid to be cerebrospinal. The symptoms had been greatly relieved by the oozing of this fluid.

The symptoms had been greatly relieved by the oozing of this fluid.

Dr. J. Ramsey Hunt said that he had seen in Bellevue Hospital last winter a woman who had been shot through the head. There was paralysis of the motor portion of the fifth nerve and a partial paralysis of the seventh nerve on the left side, with electrical changes showing the peripheral origin. The patient recovered quickly, and left the hospital in two weeks. At this time there was an occasional and scanty oozing of perfectly clear fluid from the nostril. It probably resulted from the comminution of the ethmoid and frontal bones.

Dr. Meyer said it seemed to be absolutely certain that the optic chiasm

had been destroyed in his case by a tumor.

Amyotrophic Lateral Sclerosis.—Dr. Joseph Collins presented a paper on this subject. He said that this was among the rarest of all organic nervous diseases, the diagnosis having only been made in this clinic seven times out of about seven thousand cases. In ten years at the City Hospital, where chronic nervous diseases were very common, he had not seen more than seven or eight cases. The general knowledge of the disease dated from Charcot's classical description in 1874. The following case was reported very briefly: The patient was a woman, thirty-seven years of age, who complained of pain in the head, and in the muscles supporting the head. There were atrophy of the muscles of the shoulder girdle, neck and hands, slight spasticity of the muscles of the upper extremities and Babinski's phenomenon. There were early and profound bulbar manifestations. The duration of the disease was about three years. This patient also suffered from what he took to be major hysteria. The chief pathological findings were: (1) Uniform disappearance of the ventral horn cells throughout the entire cord, affecting possibly the dorsal region more severely than the cord enlargements; (2) a zone of degeneration in the cervical and dorsal region encircling the horns; (3) a marginal strip of peculiar shape in the lumbar region; (4) deformity of the ventral face of the cord, due to a concave sinking in of the periphery; (5) a neuroglia proliferation in the degenerated white matter and also in the anterior horns at the cord enlargements; (6) evidence that the neuroglia proliferation was older in the cervical region; (7) atrophy of the anterior roots; (8) distinct evidence of cell degeneration. The pyramidal tracts were intact. The question of whether the peripheral motor neurones or the central motor neurones were the first to be involved could not be settled. It was probable that in some cases the peripheral, and in other cases, the central were first affected. He thought the lesion in some cases began in the anterior horn, and the destruction of the cells there resulted in part in the disease, and accounted for the pathological findings. It was the decay of the column cells which caused the degeneration of the white matter in the case just cited. Destruction of these column cells led to the destruction of the fundamental columns. It was true this did not occur in every case because in such cases the destructive lesion of the spinal cells confined itself to the root cells and the column cells were not implicated. This probably explained all those cases of progressive muscular atrophy with changes in the white matter. There were now eleven cases on record in which the pathological process involved both systems of neurones in their entirety. However, the disease might exist in its most typical form without any involvement whatever of the pyramidal tracts. The changes in the spinal cord sometimes extended to the posterior columns, though the significance of this was not yet known. The speaker thought it must be admitted that amyotrophic lateral sclerosis was a different disease from spinal progressive muscular atrophy, because of the different clinical course and anatomical changes. In amyotrophic lateral sclerosis there was a poison capable of

destroying both the white and gray matter. Whether this disease was a part of primary progressive muscular atrophy was another question, and, in his opinion, should be answered in the negative. The etiology of amyotrophic lateral sclerosis was very obscure. After a careful examination of the entire literature he had selected the records of 94 typical cases, and had added to them 9 of his own, 4 of them with autopsy. Of the 103 cases, 54 were males and 49 females. It was generally held that the disease was more frequent between thirty and forty, but in the hundred selected cases the fourth and fifth decades were found to be equally liable to the affection. The average duration of the disease was two years, though the minimum was a few months, and the maximum nine years. The upper extremity was affected first in 39 cases; the lower in 14, and the upper and lower extremities simultaneously in II cases, while the disease came on with bulbar symptoms in 21 cases. In the last mentioned cases atrophy or spasticity or both appeared very soon in other parts of the body. Trauma did not seem to be an adequate cause of the disease. Overwork, and especially the work of gold-beaters, embroiderers, and others, calling for exhausting use of special sets of muscles, did not seem to enter into the etiology. The disease occurred most among the working classes. A number of cases had developed shortly after parturition. Six of the patients gave a history of syphilis, but this was probably not more than the actual percentage of syphilization. In two of these cases, both his own, there might have been some relationship between the syphilitic infection and the amyotrophic lateral sclerosis. It was worthy of note that many of these patients had had syphilis, and had been workers in lead.

Dr. B. Sachs said that he thought the term, amyotrophic lateral sclerosis, was a far better clinical than anatomical designation. Clinically, the disease was recognized by the combination of spastic paraplegia with atrophic paralysis. The clinician could hardly avoid being impressed with the fact that there was not a single anatomical lesion for all these cases. recent years he had seen quite a number of cases which he had labeled "spinal syphilis of the amyotrophic type," but he would not think of classifying them as true amyotrophic lateral sclerosis. He believed the relationship between amyotrophic lateral sclerosis and progressive muscular atrophy was closer than Dr. Collins supposed. Some cases of progressive muscular atrophy went on for a very long time without lateral column symptoms; in other cases, spasticity was an early symptom. These differences seemed to be explicable by a difference in the acuteness of the disease as affecting the gray matter. In progressive muscular atrophy of the ordinary type the process was a very much slower one than in amyotrophic lateral sclerosis. He would not be willing to draw a sharp line of demarcation between the two diseases, for, he felt they were closely allied. He had been very much impressed with Gowers' lecture on abiotrophy or special vital defect. He doubted if those afflicted with either one of these two diseases would have developed them if they had not been born with some point of least resistance in the gray matter of the cord. He desired to call attention to the fact, that degeneration of the gray matter was not always followed by that degeneration of the white fibers which one would expect from the close association between the two which is assumed by the neurone theory

Dr. J. Ramsey Hunt said that Dr. Spiller, of Philadelphia, had reported a case of amyotrophic lateral sclerosis of very acute onset. He found degenerations in the association tracts of the cortex, and suggested this was the anatomical basis for many of the mental symptoms not infrequently described.

Dr. Louis Faugères Bishop said he had at the present time in his hospital service a woman with well-marked amyotrophic sclerosis, and the

husband with right hemiplegia. The latter developed last. He was disposed to think that both had a common cause, probably syphilis.

Dr. Collins, in closing, reiterated his belief that spinal progressive muscular atrophy and amyotrophic lateral sclerosis are different clinically, etiologically and pathologically. To him the special feature of interest was that in some cases there was a transitional stage in which the lesion was limited to the commissural cells binding together different portions of the cord. He did not see anything in abiotrophy having bearing upon amyotrophic lateral sclerosis. The latter was an acute, violent infection. Weak persons generally were spared, he thought, all through life from acute intoxications or infections. The etiological factor of the disease would probably be determined by the physiological chemist.

Officers Elected-Dr. Pearce Bailey, President; Dr. J. Arthur Booth, First Vice-President; Dr. Frederick Peterson, Second Vice-President; Dr. B. Onuf, Recording Secretary; Dr. F. K. Hallock, Corresponding Secretary and Dr. G. M. Hammond, Treasurer.

PHILADELPHIA NEUROLOGICAL SOCIETY.

December 23, 1902.

The President, Dr. John K. Mitchell, in the chair.

Dr. S. Weir Mitchell read a paper on Obsessions (see p. 193).

Dr. Charles K. Mills remarked that one of the most interesting points in Dr. Mitchell's communication was the fact that in the cases reported the individuals had been not only of fair, but in some cases of high intellectual attainments. He had himself seen many cases of obsessions, fixed ideas or imperative conceptions more or less expressed in action, but most of these were in those who were either suffering from or tending toward some form of mental disorder.

A very important point is the presence of these obsessions in the early stages of dementia præcox. Dr. Mills looked with great anxiety on the case of a young person in whom this tendency to obsessions of any sort is prominent and persistent. He had followed several such cases for a number of years, and had seen them terminate in some form of dementia

præcox.

Dr. Francis X. Dercum said that to his mind the question of obsessions was associated with the conception of a neuropathic state. While it is perfectly true that many of these individuals appear to be otherwise normal, we must remember that in a large number of cases the patient is in a transitional stage, and that we are dealing with a psychosis which will go on to later development.

There is a neuropathic basis in all of these cases. In neuropathic cases, fatigue may be expressed differently from what it is in ordinary in-

dividuals.

A Case of Paresis in Which a Remission Had Lasted Four Years.—Dr. Wm. Pickett reported this case. The man could not be shown. He had been conducting a bakery for the past four years, though his pupils are strikingly unequal, and are absolutely immobile, and his knee-jerks are absent. The mental symptoms of classic paresis appeared in the summer of 1898 and faded again in December of that year.

Dr. Pickett also reported a case of circular paresis and one of paranoia

with double personality.

Dr. Charles K. Mills, referring to the organic basis of hallucinations and delusions, mentioned a case which he had seen some years ago. It was that of a man of great intelligence who had had an apoplectic stroke, the symptoms indicating that the hemorrhage had been about the oblongata and oblongata spinal transition. The symptoms were persistent hiccough and impaired sensation, muscular and cutaneous, with some involvement of the cranial nerves. Among other symptoms which persisted was the delusion that he had his exact counterpart in bed alongside of him. He afterward made a partial recovery. The speaker believed that, at least in some cases, hallucinations do have a local organic basis.

Dr. Francis X. Dercum remarked that cases of the circular form of paresis as illustrated by Dr. Pickett's patient were exceedingly rare. He had seen only one case. He considered as well taken the point made by Dr. Pickett that cases with a neurasthenic stage should not be regarded as

cases of circular paresis. Cases of paresis are often seen in which there is a hypochondriacal condition before the expansive stage comes on.

Dr. William G. Spiller said with reference to hallucinations with organic lesions that he had seen a case in which word-deafness was a per-There was also mental failure with auditory hallucinasistent symptom. tions. A cyst was found in the temporal lobe on the left side.

Amyotrophic Lateral Sclerosis, with a History of Acute Poliomyelitis in Childhood.—This case was presented by Dr. Alfred Gordon. The patient was a boy fifteen years of age. At the age of one year he had infantile palsy affecting the right arm and left leg. Eight years later he had a series of infectious diseases. Later he had two fractures of the right arm. This was followed by symptoms of amyotrophic lateral sclerosis with atrophy of the scapulo-humeral type. In the lower limbs the muscles are contractured and markedly wasted. In the upper, the muscles on the right are almost completely wasted and on the left to a great extent. Some of the atrophied muscles present also increased mechanical irritability and fibrillary contractions. The muscles show either a marked diminution of electrical irritability or complete loss. Some muscles present R.D. The atrophy affects also the muscles of the thorax. Some of the deep reflexes are lost and some exaggerated. The latter is particularly marked for the patellar tendons on either side. As a matter of coincidence, the patient's thyroid gland is enlarged.

A Case of Tumor of the Brain.—This was reported by Drs. Charles W. Burr and Ralph S. Lavinson. The patient was a lady fifty-five years of age, who five years ago had a cancer of the left breast removed. There was recurrence. Slight muscular twitching of the left arm and hand was noticed with some loss of power in the hand and leg. Later she had attacks in which there was a continuous tonic spasm of the right arm lasting for hours at a time.

At the autopsy a small growth in the middle part of the ascending

frontal convolution on the right side was found.

Double Consciousness or Amnesia.—This paper was read by Dr. F. Savary Pearce. The patient, a young man, had been in perfect health until August, 1902, at which time he was in a trolley accident, and was struck on the head, and was unconscious for a moment. He was apparently well afterwards and went about his business, that of a grocer. On October 10th he left home, and that was the last seen of him for ten days. His team was brought home by two boys to whom he had given it. When he "came to himself" he was near Baltimore. He then turned and walked to his home in Philadelphia. After his return he slept almost continuously for three days. He then apparently recovered, excepting the entire loss of memory of events of three years past. His physical condition is now normal. His memory for recent events is good, but he remembers nothing from September, 1899, up to the time that he "came to himself" near Baltimore. No evidence of hysteria could be made out. The eye-grounds and the fields of vision are negative. X-ray examination of the skull is negative, and there are no evidences of fracture, nor signs of palsy anywhere.

The possibility of existence of minute diffused hemorrhages in the cortex of the cerebrum, or of commotio cerebri alone, with disassociation of function of the cerebral neurones, particularly those of the frontal lobes; or the functional disturbance of the cells in which the latest acquired conceptions and perceptions are resident, were given as possible explanations

of the rare affection.

Dr. D. J. McCarthy suggested that this might be a case of epileptic ambulatory automatism. The traumatism with these vague symptoms makes it possible that it may be classed under this head. Such patients have been known to walk hundreds of miles.

The President suggested that this might be a case of post-epileptic loss

of consciousness. He referred to a patient in this condition who kept a diary for several weeks, and who after coming to himself had no recollection of the events which he had recorded, though it was proved from other sources that the statements of the diary were correct during the above

period

A Case of Gumma of the Brain with Operation.—This case was reported by Dr. T. H. Weisenburg. The patient was thirty-seven years of age with a history of syphilis. Five years ago he fell on his head and was unconscious twenty-four hours. Eighteen months ago he again struck his head. He had headache, vomiting and convulsions beginning in the right hand. In June, 1902, Dr. John B. Roberts operated, and found a gumma of the dura and of the brain. The patient made a good recovery, but the convulsions still occurred. An interesting point is that there has been a return of muscular power although about an inch of the motor cortex has been removed.

CHICAGO NEUROLOGICAL SOCIETY.

Joint Meeting with the Chicago Medical Society, Dec. 10, 1902.

The President, Dr. Wm. A. Evans, in the chair.

The Changes in the Spinal Cord and Medulla in Pernicious Anemia.

This was the title of an address delivered by Dr. Frank Billings.

Causes.—Among other things, Dr. Billings said that our knowledge of the cause of pernicious anemia is not satisfactory. We recognize certain contributory factors and infer a condition of toxemia which has not been proved. The disease so frequently follows the infections, like syphilis, malaria, typhoid, la grippe, etc., that it is impossible to ascribe any specific relation to them. The disease occurs more frequently in women than in men. It may occur at any age, but it is more common in the fourth decade than at any other time in life. Intestinal parasites have been found present in the disease, especially the Bothriocephalus latus and the Ankylostoma dwodenale.

The condition of profound anemia, with deformed red cells, the presence of fetal red cells in the circulating blood, the presence of an abnormal amount of iron in the liver, together with degenerative changes in the muscles and in the marrow of bone, is a reasonable hypothesis for the assumption of the presence of a circulating poison—a hemolytic toxin—as the fundamental cause of the disease. The source of the poison has been the subject of many theories.

It is not improbable from the evidence we have that pernicious anemia is due to some hemolytic toxin, but whether of bacterial or autogenetic or-

igin we cannot at the present time definitely say.

Symptoms.—The symptoms of pernicious anemia are chiefly those due to a profound anemia manifested by weakness, lessened endurance, with dizziness, dyspnea, palpitation of the heart, etc. In probably a large percentage of the cases the body weight is preserved. There is a tendency to subcutaneous, submucous, retinal and other hemorrhages. Gastro-intestinal disturbance is very commonly present, and especially diarrhea. The appetite is often poor or capricious. The disease is associated with nervous phenomena in the great majority of cases; usually, however, subjective in character. The spinal cord lesions, which are now recognized as occurring in a small percentage of the cases, may appear as one of the earliest manifestations of the disease, or they may occur late, and may be manifested slightly or not at all up to the time of death.

Dr. Billings gave an analysis of forty-one cases of pernicious anemia that he had seen during the last few years. The consensus of opinion is that the nervous lesions are due to a toxic agent, which is also responsible for the anemia when it is present. The fact that the lesion does not involve, as a rule, a whole neurone or system; that the trophic cell is usually not disturbed in either the cortex, the spinal gray matter or the posterior ganglion, and that the ultimate primary change is one of degeneration of the nerve fiber itself, speaks for the effect of some blood-circulating toxin. The fact, too, that the brunt of the lesion occurs in that part of the tracts involved farthest removed from the trophic center, where the nerve fiber is the least protected by its nutritive cell, is evidence of a toxic cause.

Conclusions.—The conclusions which one may draw from a study of the subject are: (1) That there is a well-established relation of diffuse cord degeneration with pernicious anemia; (2) It seems probable that the hemolysis and the cord changes are due to the same toxin; (3) While the source of the toxin is unknown, the fact that gastro-intestinal disturbance is so common in the disease would lead one to suppose that it is of intestinal origin; (4) The diffuse degenerations of the spinal cord which occur in conditions without pernicious anemia do not appear to differ essentially from those of pernicious anemia; (5) It is possible that a common blood-circulating poison exists which may expend its force on the blood in one individual, on the nervous apparatus in another, and coincidently on the blood and spinal cord in others.

Dr. Sydney Kuh said that Dr. Billings, in speaking of the etiology of pernicious anemia, quoted the statistics of some foreign authorities based upon 270 cases of pernicious anemia. In these statistics the statement was made that of this number of patients 22.4 per cent. had suffered from syphilis, and from this the conclusion was drawn that syphilis is a factor in the etiology of pernicious anemia, although not a very important one. This statement Dr. Kuh believed was misleading. Erb and Kuhn, and he himself, had tried to find how frequent syphilis is among patients in general, and it is quite remarkable to see how exactly the statistics of all three agree, the conclusion being that 22 and 23 per cent. of patients have been

infected with syphilis.

There is no doubt that the toxin theory of the origin of pernicious anemia is by far the most plausible one. A variety of diseases, as atheroma, pellagra, ctc., can produce lesions in the spinal cord exactly similar to those mentioned by Dr. Billings. Dr. Kuh had seen one case in which the changes in degree and extent corresponded very closely to what had been described and demonstrated by Dr. Billings. In this patient, who had syphilis of the spinal cord, the parenchymatous and interstitial changes seemed absolutely independent of the distinctly syphilitic changes, and he attributed them to the syphilitic toxins.

Dr. Maximilian Herzog thought that it was not absolutely necessary to attribute the changes in the cord to toxins, because secondary anemia never leads to such changes. Secondary anemias are never as severe as initial or primary anemias. Secondary anemias do not kill the patient; he dies from tuberculosis or from some other condition, but not from the anemia itself. Dr. Herzog had never seen a secondary anemia like a primary anemia, with a blood count of 300,000. He thought malnutrition was

more responsible for the changes in the cord than the toxins.

Dr. È. R. Moras stated that from observation and reading, and from cases he had seen, he had come to the conclusion that the fundamental cause of pernicious anemia is a chemic poison which exists in a relative quantity in the blood of probably every human individual or animal. The absolute quantity in each individual is determined by the habits, environment and special occupation and diet. Chemical analysis demonstrates that the acid produced in those conditions which are analogous to those found in the blood and tissues of pernicious anemic patients, is formic acid.

Dr. Archibald Church stated that about nine months ago he had under observation five cases of pernicious anemia with nervous manifestations. He had notes of about eighteen cases. Three years ago he called attention to the fact that in some instances spastic conditions were present, and that these very frequently terminated in flaccid paralysis. As the disease progresses it takes on the type of an ascending myelitis. Paresthesia is sometimes followed by anesthesia. In at least two cases he had seen a band of paresthesia or hyperesthesia followed by anesthesia gradually approach the trunk and chest, reach the neck, and terminate in Landry's paralysis. He was convinced that in some instances the gray matter is

seriously involved. Recently he had followed to a fatal termination a case in which the lower limbs were at first in a spastic condition, and subsequently became flaccid and finally paralyzed; bed-sores developed, and the muscles of the trunk showed degeneration. Later the muscles of the hand and forearm showed decided atrophy, with fibrillary degeneration.

A point of some importance in the clinical onset of this disorder is that the mental picture is somewhat peculiar, owing to the probable impoverishment of the nutrition of the brain. These patients often present eccentricities of character and temper; they have hallucinations of sight; very commonly they will misinterpret things; they see objects crawling over the wall or bed or in the air, and will describe them. Other symptoms were mentioned by the speaker. Cases with which he had come in contact have simulated three conditions, locomotor ataxia, multiple neuritis and myelitis.

The speaker spoke of the beneficial results following the use of injections of salt solution. Dr. E. F. Wells had told him of a case which he believed to be practically cured by the use of large injections of salt solution.

Dr. Billings, in closing the discussion, said his belief is that a *Bothriocephalus latus* which will attack a red blood cell will not attack a tissue cell, but at present our knowledge of the blood conditions in these cases is in its infancy.

The clinical cases related by Dr. Church he had also seen, and in the original address which he delivered in Boston he added four other cases of the disease. He had not been able to procure a necropsy in the cases in which death occurred, but he gave their clinical histories. Dr. Church and he were associated in at least one of these cases, and he observed it through most of its clinical course—the one he referred to as terminating like an ascending myelitis. In addition, the patient presented in her first two years of illness a secondary anemia as marked as any he ever saw.

He had tried all sorts of treatment, and from the first had used the one suggested by Dr. Church, and while in some instances it had been of benefit, it was his experience that the patient dies, in spite of the normal salt solution in any amount injected into the cord. The only good influence it has is that it fills up the blood vessels. He did not think the portal circulation is improved very much, or the intestinal tract cleansed very much by washing out four or five feet of the colon and leaving the rest of the small intestine untouched.

Perisope.

DEUTSCHE ZEITSCHRIFT FUER NERVENHEILKUNDE

(Vol. 22, 1902, Parts 1-2.)

I. A Case of Stab Wound of the Spinal Cord (Brown-Séquard Paralysis) with a Special Consideration of the Ability to Localize.

SCHITTEN HELM.

2. A case of Brown-Séquard Unilateral Paralysis after Stab Wound of

the Spinal Cord. FÜRNROHR.

3. Experimental Contribution to the Knowledge of the Inhibition of the Reflexes after Unilateral Section of the Spinal Cord. Kron.

4. The Histology and Pathology of Brain Tumors. Bielschowsky.

5. Remarks upon the Pathological Anatomy of Syphilis of the Central Nervous System. Erb.

6. Transplantation of Tendons in the Spinal Paralysis of Children. Vul-

7. Clinical Contribution to the Knowledge of Hereditary and Family Spastic Paralysis, KÜHN.

8. Relations Between Myoclonia Familiaris and Congenital Myoclonia.

LUNDBORG.

9. The Babinski Toe Reflex in Physiological Conditions. BICKEL.

10. Brief Communications: (1) The Polyclinic for Nervous Diseases in Strassburg. Fürstner. (2) Lesion of the Conus Medullaris and Cauda Equina. Rosenfeld.

I. Stab Wound of Spinal Cord.—Schittenhelm reports the case of a man who was stabbed in the back between the fifth and sixth cervical vertebræ, with a broad-bladed knife. Immediately after the injury, however, the patient had complete paralysis of the right arm and leg, and difficulty in micturition and defecation. Several months later there was slight motor paralysis on the right side, and some sensory disturbances on the left, particularly loss of pain and temperature sense. A most careful description of the sensory phenomena is given and Schittenhelm discusses the exact localization of the injury. An interesting symptom was the condition of the localization sense. This was found to be completely lost in regions where motility, deeper sensation, and touch were intact, and when analgesia and thermalgesia were absent. It was variously disturbed in other regions. He believes the trouble was due to injury of the posterior columns and the cerebellar and motor lateral columns of the right half of the spinal cord.

2. Brown-Séquard Unilateral Paralysis.—Fürnrohr also reports a case of stab wound of the spinal cord causing Brown-Séquard's paralysis. Immediately after the injury the right leg was paralyzed, and there was a peculiar feeling in the right side as far as the nipple. Nine weeks later slight movement could be performed with the right leg. There was thermanesthesia in the left leg, the tendon reflexes were increased on the right side and slightly increased on the left side, and there was also ankle clonus on the right side. The tibialis and toe phenomena of Strümpell were both present in the right leg. A careful examination of the patient showed diminution of the pressure sense and

position sense on the same side as the motor paralysis—that is the right—and on the other side paralysis of the pain and temperature senses. There

was also some peculiar subjective paresthesia on the right side.

3. Hemisection of the Cord and Inhibition.—Kron has performed a number of experiments upon dogs, making a hemisection of the spinal cord in the upper cervical region, then testing various reflexes in these animals in order to determine what effect this lesion had. The essential conclusions are as follows. After section of the spinal cord there is inhibition of the reflexes which is much more transient than is generally supposed. Therefore there does not seem to be any reason to suspect the existence of inhibitory fibers. After hemisection of the spinal cord respiration ceases on the corresponding side, but this is restored as soon as the phrenic nerve is cut upon the opposite side. The reflexes recur at varying intervals that depend largely upon the level and upon the severity of the lesion. There is no essential difference between the phenomena in animals and human beings; the differences are only slight.

4. Brain Tumors.—Bielschowsky reports four cases of brain tumor. The first occurred in a girl of eighteen years, who had nausea and headache, the latter becoming so severe that she was brought to the hospital, where bilateral choked disc was discovered. Later she had weakness in the legs, then staggering gait, loss of vision and some impairment in the heart. There was then loss of power in the right arm. She was re-admitted to the hospital and divergent strabismus was noted. There was also a distinct Romberg symptom and gradually increasing somnolence, then a series of convulsions, the patient finally dying. A tumor was found involving the corpora quadrigemina and apparently proceeding from the choroid plexus. There is a careful description of the histological changes including the appearance of the tumor, which was apparently epithelial in structure. The case was characteristic because paralysis of the muscles of the eye and ataxia were both present. The second case was a woman of forty-two years who had had symptoms of cerebral trouble for three years. There was headache, tinnitus, and attacks which consisted of tremor with numbness of both arms. There was impairment of vision and finally complete loss of sight. When admitted to the hospital she was found to be entirely deaf in the right ear; hearing was normal in the left ear, and taste and smell were not disturbed. There was papillitis in both eyes, weakness in both arms, and stumbling gait. She developed slight paralysis in the lower half of the right side of the face, which finally became complete, with some reactions of degeneration in the muscles. The patient finally died as a result of a bedsore. At the autopsy a tumor was found at the base of the cerebellum pressing upon the right side of the pons and destroying the right acoustic and facial nerves. This tumor appeared to be a fibroma and to arise from the pia. It is interesting that the hemiplegia was not alternating, it was homolateral. In a third case, a man twenty-seven years of age, the patient had noticed loss of power for half a year. There was some headache, vomiting, bilateral choked disc, staggering gait, and three days after admission, in the course of a severe attack of headache with frequent vomiting, the patient died. A glioma that had undergone cystic degeneration was found occupying the floor of the fourth ventricle. At the autopsy this was supposed to be cysticercus. The fourth case, a woman of twenty-four years, had suffered from vertigofor a number of months. later the gait was uncertain and staggering, and for about four weeks before admission she had had frequent vomiting. When admitted bilateral choked disc was present, there was tenderness over the left occipital lobe, and staggering gait, but no disturbance of sensation. The patient died suddenly, and at the autopsy a tumor was found in the right frontal lobe, cystic in character, which proved to be an angioma. The interesting symptom in this case was the long persisting vertigo.

5. Pathology of Nervous Syphilis.—Erb, after discussing the manifold lesions and types of disease produced by syphilis, and reaching the conclusion in common with other pathologists, that it is impossible to state positively in many instances whether or not a lesion is syphilitic, has undertaken to collect a number of presumably syphilitic cases with degenerative lesions from the literature, and to classify them according to their different types. The first type includes cases of gummas, meningitis, myelitis, arteritis, with direct or focal degeneration of known specific character, in all of which leutic infection was definitely known or probable. The second class includes typical or primary direct degenerations not apparently specific associated with more or less certain specific changes in the meninges, the cord and the blood vessels. This includes a number of non-tabetic scleroses. Finally a third group consists of primary scleroses in certain syphilitic individuals without associated specific lesions. Of these he collects cases representing simple syphilitic disease of the pyramidal tracts, combined systematic disease, systematic disease of the posterior columns, especially tabes, and primary nuclear degenerations, atrophy of the eye nerves, etc. He summarizes his results as follows. That there are in some cases of unquestionable syphilis of the central nervous system changes that resemble primary degenerations, in other cases in which the primary degenerations form the predominant feature of the disease, there are slight syphilitic changes, and finally primary degenerations without syphilitic changes in patients who have certainly been infected with syphilis. He therefore believes that there is no reason for supposing that the absence of syphilitic lesions, as in the third group, is sufficient proof that the process is not syphilitic. In fact there can be no doubt that syphilis is frequently the cause of various forms of degeneration, particularly that involving the tracts. Regarding the nature of syphilis he suggests, as has often been suggested before, that the analogy between syphilitic and tuberculous lesions leads to the supposition that the infecting organisms must be very similar. It is interesting, however, to note how differently the two processes act upon the central nervous system, for there is no evidence that tuberculosis has ever been associated etiologically with either progressive paralysis or tabes. This seems to prove that the localization of the process in these diseases is not due to some weakening factors that act particularly upon the involved tissues.

6. Tendon Transplantation.—Vulpius discusses the transplantation of tendons in the spinal paralyses of children. This is of course useful only in partial paralysis, and may possibly be of use in other forms of paralysis such as that following injury as well as anterior poliomyelitis. He mentions some cases in which this transplantation was performed upon the thigh. In one instance the tendon of the semimembranosus was transplanted into the tendon of the quadriceps, at the same time the semitendinosus was cut in order to relieve the flexor spasm, and finally an osteotomy was performed in order to correct genu valgum. Seven months after the operation the patient was greatly improved and the gait was almost normal. Another case, a boy of six years and a half, had had poliomyelitis in the first year of his life, causing extensive paralysis in both legs followed by extreme deformities. A series of operations was performed to correct these deformities. The tendon of the extensor hallucis was transplanted to the tendon of the tibialis anticus; the tendon of the biceps was transplanted to the tibia, and finally after numerous tenotomies the leg was straightened. In order to promote extension from the knee, the tendons of all possible muscles were transplanted to that of the quadriceps. Seven months later the patient was able to walk without apparatus, and although there was

complete ankylosis of the left knee, there was a fair degree of flexion and extension in the right knee. There was also considerable increase in the power of the muscles and an extraordinary improvement in the con-

dition of the patient.

7. Hereditary and Family Spastic Paralysis.-Kühn reports the following interesting instance of hereditary and family spastic spinal paralysis. Nothing could be learned concerning the grandparents of the patient, but the father had always—according to report—had some difficulty in walk-ing. The mother had always been healthy. Of seven children, one, a daughter, died in infancy, two other daughters were married and had healthy children, a third emigrated, and the three sons suffered from a disease apparently similar to that described in the father's case. At the age of eighteen or nineteen one son began to experience pains in the spinal column in the region of the hips. Gradually the gait grew worse, but his arms remained healthy throughout, and he suffered from no other symptoms. He was married twice but had no children. Investigation showed rather typical spastic paraplegia, the electrical reactions of the muscles were normal, the patellar reflexes were increased, the Achilles tendon reflex and ankle clonus were not present, Babinski's phenomenon was not present, and Strümpell's tibialis phenomenon was pronounced on both sides. The second son also commenced to notice his disease about the eighteenth year. The symptoms were similar to those of his brother. The third son noticed the symptoms earlier, in the tenth or twelfth year. Kühn also reports a fourth case with somewhat similar symptoms. The patient began to notice symptoms of his trouble about his twenty-second year. His gait gradually became impaired and finally it was necessary for him to use a cane. The arms were normal, the muscles showed resistance to passive movements, the reflexes were increased, there was ankle clonus and Babinski's phenomenon was present. The tibialis phenomenon of Strümpell was present in both legs. This patient had four brothers all of whom died in infancy, and three sisters. His father had always been healthy. Kühn, in discussing these cases, states that it is difficult to understand what part heredity plays in the development of the disease. The anatomical lesion is probably primary systematic degeneration of the lateral pyramidal tracts. The prognosis is not unfavorable to life, but it seems impossible to produce any effect upon the disease by

8. Family and Congenital Myoclonia.—Lundborg contributes a discussion of the relation of familial myoclonia to congenital myoclonia, giving

the following interesting comparative table of the symptoms:

CONGENITAL MYOCLONIA.

caused by some autointoxica-

(2) Symptoms are present at birth (2) Symptoms occur in later childor appear in earliest child-

hood, rarely later.

(3) Usually affects several persons (3) Affects several brothers and of the same sex and often several brothers or sisters of same family.

(4) Myotonic reactions.

(5) Slight psychic disturbances may occur from time to time in various forms, as weak-mindedness.

DEMENTIA MYOCLONIA OR FAMILIAL MYOCLONIA.

- chronic disease probably (1) A chronic disease probably caused by some autointoxication.
 - hood, but not often after-
 - sisters of same family and not rarely several families in same group.

(4) Sometimes myotonic reactions.

(5) Pronounced psychic disturbances occur in course of the disease and terminate with distinct dementia.

- fected by a tonic spasm which differs in intensity in different muscles and rarely affects those of the eye.
- (7) Alcohol has a favorable action in moderate doses. Fever also produces improvement, but cold and fatigue make the symptoms worse.

(8) Mechanical irritation causes (8) The same. spasms of the muscles which gradually relax.

(6) The striated muscles are af- (6) The striated muscles are affected by a spasm which at first is tonic, later clonic. It varies in intensity in different muscles and the eye muscles are rarely affected.

14

(7) The same.

Lundborg believes that there are so many points of similarity in the two diseases, that the apparent intimate relation cannot be ascribed merely There is much evidence to prove that myoclonia is due to a

poison generated somewhere in the system.
9. Babinski Toe Phenomenon.—Bickel has tested the Babinski reflex in more than 300 persons, mostly women and children, and found it positive whenever there was reason to believe in the existence of a lesion in the pyramidal tracts. It is also occasionally positive in hysteria, rarely positive in healthy adults, sometimes slightly indicated on one side. Occasionally it was positive at one investigation and negative at another. Often, however, in persons with a healthy nervous system in whom the reflex was negative while awake it became positive during deep sleep. Under these circumstances it was usually energetic and not slow as in pathological conditions. Also in cases of chloroform narcosis the reflex was found to be positive, and therefore Bickel concludes that it is an indication of functional inactivity of the cortex.

10. Briefer Communications.—Rosenfeld reports the case of a man twenty-eight years of age who received a severe injury in the lumbar portion of the spinal column causing immediate paralysis of the legs. Some months later on examination there was found to be increase in the reflexes in the lower extremities, the gait was impaired, there was loss of control over the sphincters, disturbance of sensation on the outer and upper sides of both feet, over the pubic and sacral regions and extending along the back of both thighs, that is, a typical saddle anesthesia. A diagnosis was

made of a lesion of the conus medullaris.

JOSEPH SAILER (Philadelphia).

ARCHIVES DE NEUROLOGIE.

(No. 85, January, 1903.)

I. The State of the Fundus of the Eye in General Paretics and its Initial and Final Anatomical Lesions. Keraval and Raylart.

2. The Evolution of Obsessions and their Passage into Delusions. Séglas.

3. Motor Re-education in Diseases of the Nervous System; its Application to the Ataxia of Tabetics. Constensoux.

I. The State of the Fundus of the Eye in General Paretics.—The author states that it is only in the second half of the nineteenth century, that, thanks to the ophthalmoscope, neuropathologists were able to examine the fundus of the eye of general paretics. Since 1853 Lasègue, Moreau, Marcé, Dagonnet practiced this examination, but left no data concerning the alterations they observed; Bouchut, relating three cases of general paresis, notes in each the existence of papillary atrophy. The author re-

ports the notes of Voisin and Magnan in 1868, of Tebaldi in 1870 and of Noyes in 1872. In 1879 the thesis of Boy and the memoirs of Doutrevente appeared, who, having examined 47 general paretics, came to the following conclusions: "Papillary atrophy either commencing or confirmed is met with from five to ten times in one hundred cases. We remark more often some vascular alterations, such as especially the dilatation of the veins, the alteration of the walls and some hemorrhagic spots or a generalized congestion of the fundus of the eye." The author gives the results of his studies of 51 cases of general paresis at the asylum of Armentiéres. He also gives full history of three cases and finishes his article of thirty pages (which contains 9 illustrations of sections made), with the following conclusions: "From the ophthalmoscopic examination of out of 51 general paretics, there appears the following: (1) the majority of these patients at the asylum of Armentières present some notable lesions of the fundus of the eye; there are scarcely any of them, except those who are in remission who do not present it; (2) we find in 7 patients, in whom general paresis has reached an advanced stage, 5 cases of white papillary atrophy, one of gray atrophy, one of bilateral posterior sclerotitis without myopia; (3) we find in 13 paretics a state of pale papilla, light in color; (4) in 22 others a mildly light appearance was observed in a segment of the papilla, whether external, internal, inferior or superior with undefined border. The two appearances are the preliminary states of papillary atrophy; (5) in general paretics in remission or attacked by a retarded form, it has been impossible to find any ophthalmoscopic lesion; (6) the ophthalmoscopic examination has in all points been confirmed by the microscope, it operates the same in the less accentuated cases, in papillitis and in neuritis presenting the same characters as in chronic diffuse meningoencephalitis: infiltration of the higher elements of the papilla and of the optic nerve by the connective tissue and neuroglia cells, thickening of the connective tissue of the nerve, diffuse alterations in the ganglion cells and the nerve fibers of the retina susceptible of ending in cases the most advanced, the total destruction of the nerve cells of the retina and the production of papillary sclerosis." There is subjoined a list of 29 authors who treat of the subject.

2. Evolution of Obsessions and their Passage into Delusions.—The author considers that the opinion generally entertained in France, that obsession does not evolve, does not transform itself, never ends in delusion properly so-called, is open to discussion. The author discusses obsession under the heads of melancholia, mental confusion, dream-like delusion and systematized delusions. One of the cases he observed is the following: Miss J. presents, since the age of eighteen, obsessions of doubt in the form of interrogations; metaphysical inquiries; later obsessional ideas in form of contrast, mania of blasphemy, impulses to blaspheme when praying in church, to strike the persons she loves best; doubt upon the execution of her divers impulses. At the age of twenty-four Miss J., who hitherto had full knowledge of her obsessions, comes to consider them as the action of an evil spirit. She, who hitherto, in analyzing herself, said very justly: "It is as if there was in me a second thought, which always contradicts me and urges me to evil, when I have the idea of good," finishes by believing herself really the sport of a wicked being, of a demon, which possesses her, opposes itself to all her acts, inspires and directs her at its will, and her conviction is such that she sees no succor except in exorcism. "According to Pitrés and Régis the forms which finally end in systematized delusion are obsessional states with symptoms chiefly intellectual, and those which turn into anxious depression are obsessional states with symptoms chiefly emotional, that is to say, phobias." "My personal observation," says the author,

"does not authorize me to partake of this view, applicable perhaps to some particular cases. I would rather believe that obsessions, which may finally end in characterized insane accidents, whatever may be the form, are chiefly obsessions called intellectual and, in particular, the different types

described under the general name of folic du doute."

3. Motor Re-education in Diseases of the Nervous System; its application to the Ataxia of Tabetics.—The subject is discussed under two heads: (1) Motor re-education in general, and (2) the re-education of the ataxic. It may be understood, says the author, that in cases where some sort of perturbation of the nervous system has deranged that delicate mechanism, without at the same time destroying completely the elements of the neuromuscular motor system and notably where voluntary contractions are not abolished, a new education of the altered centers can re-establish the equilibrium of the contractions and consequently the lost functions. Experience proves that this hope is legitimate. This is the first principle of motor re-education. It is a second which extends our field of action. No movement is effected without the simultaneous concourse of several muscles and at times, when one of them becomes insufficient, others may compensate its deficient action. He cites the cases of aphasic and agraphic patients, who may acquire special education. Re-education, the method based upon these two principles, can be defined as the totality of the processes of therapy, by methodical movements, which look especially to the re-establishment of functions, either by correcting, by a new impulse, anomalies of function in nervous elements or in attributing to other organs, functions belonging primarily to destroyed organs. At times function alone is disturbed, but in many other cases the organs themselves are injured and should themselves be treated by independent processes of re-education. It is necessary to associate other methods of physical therapy. In the matter of re-education general knowledge is only of value for the applications which one can make of it to each particular case. There cannot exist an immutable series of exercises applicable to all patients stricken with the same affection. It is necessary in order to direct the treatment usefully, after the diagnosis is established, to determine exactly the nature of the troubles observed, their localizations, their degree in each muscular group; thus only is one able to foresee what it is possible to expect of these muscles and what exercises of re-education suit them; then we should watch closely the effects, modify them according to the changes which are observed and seize from day to day the various indications which present themselves. We should take great account of the symptoms observed consecutively with the motor troubles, the disorders of sensation for example, the state of the forces, the intelligence and good will of the patient. To re-educate a patient is a work essentially clinical and consequently varies in each particular case, the success of which depends no less upon the ability of the physician than upon the symptoms which he has to combat. This is why we think that re-education can only be well undertaken by a physician and not by his assistants, and that by a physician having experience in nervous affections and knowing the difficulties of the clinic; by a specialist familiar with therapy by methodical exercises. Re-education may be applied to the following affections: (1) Static and locomotor; (2) movement of superior members; (3) troubles of phonation; (4) movements of the face and neck; (5) movements of the eyes; (6) respiratory movements: (a) functional troubles, tics and stammering; (b) troubles of organic origin, cardiac, emphysematous, tuberculous; (7) movements of the heart. The author gives the history of the re-education of the ataxic. The Swiss physician Frenkel obtained the first important results. He states that Frenkel's exercises were more empirical than scientific, but he first formulated the idea that ataxia regularly treated is not incurable. If we

have been hitherto powerless to re-establish reflex muscular action when abolished, we can still in a large measure diminish the number and frequency of involuntary movements. We know that muscular sensibility can supply articular sensibility, which is always more profoundly affected; that, save in grave cases, muscular anæsthesia with its divers varieties is rarely absolute; that muscular sensation can be ameliorated by re-education, thus become a great aid in the re-establishment of equilibrium. It is not rare to see in tabetics groups of muscles that in appearance are paralyzed and in which methodical exercises, little by little, permit patients to recover a more or less correct voluntary contraction. The first part of the treatment of the ataxic is the re-education of each muscular unit; the second part is the treatment of incoordination. What is most interesting, is the understanding of contraindications, for before undertaking a treatment long and difficult, we should be assured that it is not to be injurious and that it would really be useful to the patient. The contraindications are, e. g. cachexia of the subject, the existence of cardiac troubles, or asthenia very marked, the co-existence of certain symptoms, arthropathy, fragility of bones, amaurosis, psychical troubles, or even deficiency of intelligence. Since we understand better the treatment of tabes, we do not consider it an affection having an evolution fatally progressive. When we are aware of a period of improvement, after one of decline, then comes the moment to regain the whole or part of the lost ground and to repair the disorders which have arisen. The cases where re-education gives no results are explained in our opinion, by one of the following reasons; certain contraindications have been misunderstood, the tabes is aggravated, the patient is refractory or inattentive, or the re-educator is not equal to his task. The author insists on special experience in the physician, in exercises adapted to each case, in care that they be not too prolonged, but at the same time frequent; "little and often" is the rule. During the daily exercises, which the physician directs in person, he should give the patient the most minute directions as to the movements which he is to execute in his absence. It is well to interest an intelligent man in his treatment by giving him some explanations. The improvement of some of the patients excites his emulation and the sight of the troubles of others inspires some resignation. The author gives brief histories of II cases: The first, an officer in the army, forty years of age, confirmed tabes for seven years; motor incoördination for two years, had to abandon active service, walked with incertitude, assisted by a cane, with difficulty ascended and descended stairs, understood perfectly his treatment. At the end of four months there was scarce a trace of incoördination, he returned to his regiment, mounts his horse. Since the summer of 1901 he has not left active service. No. 2. At the end of four months rejoined his regiment. No. 3. At the end of three and a half months left the hospital alone and afoot. No. 4. Had been for seven months in bed and absolutely incapable of standing upright. At the end of the year she is able to take care of herself, provided she is prudent, but never dares walk in the street unaccompanied. "If only a few years ago tabes was in the great majority of cases considered a malady without appeal, almost fatally progressive and necessarily ending in confirmed ataxia, today, neurologists agree that such a picture no longer corresponds very often with the facts; not only does the malady spontaneously present durable remissions, not only must we settle with tabes frustes, when it only betrays some mild symptoms and does not evolve, but we know that we are not unarmed before the danger of posterior sclerosis; we know that our the-rapeutic methods result more and more frequently in arrest of the malady. Several physicians have also been able to speak of the curing of tabes, thus bringing together two words which hitherto seemed incompatible; it is to say, how changed is the prognosis of the malady; it is the same in the

most grave of its symptoms, ataxia. Numerous observations prove that ataxia is not incurable; we can now oppose to it rational and efficacious therapeutic methods."

RICHARDS (Amityville, L. I.).

AMERICAN JOURNAL OF INSANITY

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I. Nature and Pathology of Myoclonus Epilepsy. CLARKE and PROUT.

2. Nurses in Hospitals for the Insane. RICHARDSON.

3. The Mental Status of Czolgosz, the Assassin of President McKinley.

4. Litigious Insanity, with Report of a Case. LANE.

- 5. Sanitation in Asylums for the Insane with Especial Reference to Tuberculosis. Mac Callum.
- 6. Some Results and Possibilities in Family Care of the Insane in Massachusetts. Copp.
- 7. Tent Life for the Demented and Uncleanly. WRIGHT.

8. Tent Life for the Tuberculous Insane. HAVELAND.

9. Sympathetic Insanity in Twin Sisters. WALKER.

I. Nature and Pathology of Myoclonus Epilepsy.—It is an essentially rare affection, only 57 cases have as yet been recorded, which include the authors' four. Many conditions have been described, which are unquestionably related to this disease type, if not such in reality. Unverricht was the first to definitely describe it in 1891. Probably many cases have escaped observation. Myoclonus has been found to be associated with general paresis and other cortical lesions. The predisposing causes of myoclonus are found largely in family degeneracy, essential epilepsy equally so in this respect and hence occurs in several generations of the same family, and it is doubtful if myoclonus-epilepsy ever occurs in an individual of healthy stock. Various forms of degeneracy may lead up to myoclonus-epilepsy and other manifestations of degeneration, like insanity, chorea, etc., which are always found in other members of the family. The stigmata of degeneration are well marked in such families. The immediate exciting cause alleged may be trivial. Evidence of traumatism to the head or other parts of the body or fright is found in a small percentage of cases. Fatigue from overwork, alcoholic debauches and infectious fevers occasionally present. These are doubtless of serious moment, only in so far as they induce a condition favorable to autointoxication. This applies especially to extreme fright. The autointoxication may be external to the intestinal tract, is more probably dependent on a condition of faulty chemotaxis of the cortical cells. Men are more often affected, in the ratio of five to three. All the recorded cases developed prior to twenty, except one at thirty. In three-fourths of them between nine and fifteen. In about half of the cases the epilepsy appears first, in one-third the myoclonus, in the balance the two simultaneously. The epileptic attacks usually nocturnal at first, later diurnal. As a rule epilepsy continues through life, but in a few instances exists only at the beginning of the disease. The seizures are never preceded by an aura, but premonitory signs of increased myoclonic contractions are in evidence, yet seizures may not occur at their climax. The epileptic attacks are often abortive, the tonic stage being absent, tongue-biting and post-epileptic coma are also wanting. The muscles involved in the epileptic seizures are most often those affected by the myoclonic contractions. There is no periodicity in the occurrence of the seizures and death from status epilepticus unknown, yet a sort of myoclonus status often hastens or actually causes death. Long remissions in the epileptic paroxysms often occur, years even intervening. Many times consciousness is only disordered or partially lost and post-epileptic automatism rare. Mel-

ancholic mania quite common after a number of "bad days." mental stigmata present. The myoclonus here is often atypical The contractions are lightning-like and of a fibrillary character, involving only parts of certain muscles. The "live flesh" or tremors develop more or less rapidly in a few weeks or months into typical myoclonic contractions. They rarely remain fibrillary throughout life. A single tonic contraction may constitute the whole clinical picture. The clonic contractions of myoclonus pass imperceptibly into the tonic stage of the epileptic paroxysm, the contractions are often strong and affect large masses of muscles, so that loco-The trunk is often affected, causing the body to motor effect is common. be jerked antero-posteriorly and laterally. The face and distal portions of the extremities are quite often involved. Both sides of the body are affected alike, but the contractions may be more frequent and violent on one The myoclonus usually begins in one of the upper extremities, then involving the lower, chest, abdomen, neck and face in the order named. The muscles about the eyes and mouth usually last affected, although the reverse has happened. Tongue and diaphragm often suffer in severe cases, causing a peculiar grunt. The contractions more severe some days than others, and it is rare for days to pass entirely free from myoclonus. As the disease develops the myoclonus becomes more or less persistent while awake, causing an exhaustion often terminating fatally. Long remissions may occur under sedative treatment even in severe cases. first the myoclonic contractions may be controlled voluntarily or by calling into play antagonistic muscles. In the early stages the convulsive movements only occur during voluntary movements. When the disease becomes fully developed all voluntary movements are diminished, a feeling of lassitude is often complained of. Both superficial and deep reflexes are usually exaggerated, especially on the side most affected. Speech disorders are not always present. As a rule there is a lack of physical and psychical development. Rachitis, a dwarfish stature and lack of muscular and osseous development. A general malnutrition results from the difficulty in swallowing; the patients are also anemic and subject to gastro-intestinal symptoms, anorexia and diarrhea readily occur and regurgitation of food is common to some cases. Aubuminuria is occasionally found, indicanuria is frequent. The psychical state varies from slight mental enfeeblement to complete imbecility or idiocy. The majority are feeble-minded, often emotional and subject to attacks of furious violence. Many become insane with unsystematized delusions. Dementia progresses with the disease. Prognosis invariably bad, no cures are reported, yet the disease may be ameliorated. It tends to shorten life, the patient generally dying of inanition, pulmonary congestion and a sort of presentility due to the malnutrition. The majority die in early adult life. These patients are usually sterile, but children born die early. The diagnosis of typical cases is easy. Errors are generally due to placing too much stress on single symptoms of the disease. There are family types and sporadic cases, the latter forming the majority. ease is to be differentiated from hystero-epilepsy, essential epilepsy with pseudomyoclonic contractions or "jerks," the idiomuscular tremors in epilepsy, isolated or multiple tics in epilepsy, choreic epilepsy and myoclonia in general paresis. The state of consciousness often decisive with respect to essential epilepsy. The stigmata of hysteria should give rise to a doubt in the diagnosis. Loss of consciousness, tongue-biting, irresponsive, dilated pupils and stertor confirm the diagnosis of epilepsy. Short, sharp contractions of the proximal muscles of the extremities and especially those of the trunk, which cannot be produced voluntarily, indicate the myoclonic nature of the trouble. The pseudomyoclonic movements or premonitory "jerks" in essential epilepsy always attended by impairment or loss of consciousness, are simple flexure movements and never multiple, affect the upper extrem-

ities only, are always bilateral and synchronous and consist either in flexion of the forearm or adduction of the whole upper extremity. In the common atypical cases the differential diagnosis is difficult and probably forms the connection between classic and myoclonus-epilepsy. The idiomuscular tremors of epilepsy are rhythmical, uninfluenced by the will, and never severe enough to have locomotor effect. The various tics of epileptics are generally confined to the face, not coordinated and usually cause voluntary or reflex emotional acts. Coprolalia, echolalia, achemesis and fixed ideas are often associated. A close association of the pathogenesis of the two affections probable; the difference consists in the motor neurones involved. In choreic paresis and infantile spasmodic hemiplegia the convulsions begin and generally involve the parts once paralyzed, the choreiform movements are generally rhythmical and confined to one-half of the body; unilateral atrophy also occurs. Some authors believe essential myoclonus is so closely related to degenerative chorea that a differentiation is impossible, but this is hardly tenable. It is rare to see any form of chorea associated with epilepsy, while twenty per cent. of myoclonics are epileptic. The writers claim never to have seen a case of choreic epilepsy in their extensive experience with epilptics, and in all probability myoclonus-epilepsy and choreic movements are easily differentiated from myoclonus. The treatmen can only be palliative, of which bromides occupy the first place and should be given for a long time. Flechsig's opium treatment has met with good results. Chloral may be combined with advantage. As myoclonic contractions are most severe in the morning, a light repast may be given the patient before arising with advantage. Coffee in large portions has warded off threatened myoclonic contractions. Attention should be given to the diet and general hygiene. An outdoor life is advisable as far as practical. The lesions underlying myoclonus, as well as those of epilepsy, must be in the brain cortex in all probability. The gross anatomical appearances are of little account. The pathology of the few cases observed shows a mild meningitis and an accumulation of cell elements about the vessels and cells, with some increase of the interstitial product common to degenerative processes of the brain and meninges. The lesion seems to involve the nucleus and intranuclear network of cells of both sensory and motor types. The pathogenesis seems to be an intoxication or autointoxication of these cortical cells probably due to a faulty chemotaxis of these Three cases are reported to confirm the data given above.

2. Nurses in Hospitals for the Insane.—Nothing new is offered; the general experience of hospital officers is confirmed. The advantage of female nurses on the male wards is shown by the greater neatness, less fre-

quency of complaints and the patients' greater contentment.

3. The Mental Status of Czolgosz, the Assassin of President McKinley.

—A full detailed account is given of the assassin as related by members of his family, friends, associates and those with whom he had lived at various periods of his life. The writer holds that he was suffering from a form of mental disorder similar to the hebephrenic type of dementia præcox and was wholly dominated by the delusion of benefiting "the poor people," which led to the tragedy. He summarizes his argument in the ten following conclusions: (1) I feel that from further information than that possessed by those experts who examined Czolgosz after his crime, the opinion then expressed by them cannot be accepted as the final one. (2) Owing to lack of time, it was impossible in the examination referred to, to investigate the early history of Czolgosz. Had this been done some of his statements would have been found to be inaccurate. (3) He was not in my opinion an anarchist in the true sense of the word, and while anarchist doctrines may have inflamed his mind and been a factor in the crime, it was not the true cause or an adequate explanation. (4) He had been in ill health for some

years, changing from an industrious and apparently fairly normal young man into a sickly, unhealthy and abnormal one. (5) While in this physical and mental condition of sickness and abnormality, it is probable that he conceived the idea of performing some great act for the benefit of the common and working people. (6) This finally developed into a true delusion, that it was his duty to kill the President, because he was an enemy of the people, and resulted in the assassination. (7) His conduct after the crime was not inconsistent with insanity. (8) His history for some years before the deed, the way in which it was committed and his actions afterwards furnish a good illustration of the typical regicide or magnicide as described by Regis. (9) The postmortem examination threw no light on his mental condition and would not invalidate the opinion that the existing delusion was the result of disturbed brain action. (10) Finally, from a study of all the facts that have come to my attention, insanity appears to

me the most reasonable and logical explanation of the crime.

4. Litigious Insanity, with Report of a Case.—This condition has been classed with paranoia by some authors, by others as a form of moral imbecility; the latter is untenable, as moral imbecility is manifested at an early age, while the former usually appears at about the third decennary, further it shows a progressive character, a fixed idea generally dominates the whole life and is woven into the delusions. There may be a real or fancied grievance as the starting point and this so controls the patient's thought, that he begins a legal action to obtain redress, and as his ideas of his rights are perverted, the courts fail to sustain his position and after repeated failures to get justice he fancies due him, he arrives at the conclusion that the legal profession, the officers of the court, including the judges, are in a combination to defraud him. He then resorts to any means to gain his end and he becomes so absorbed in his ideas, that he neglects his business, family and his personal wants and comforts. His final appeal is to the chief executive. The writer reports the case of a lady whose litigious de-lusions so dominated her, that she accused her husband and children of charges she always failed to sustain, involved herself in various suits at law, ruining herself financially, and finally lived in the most abnormal manner, and at last was found dead in her home. Various efforts had been made to have a guardian appointed for her, but always unsuccessfully

5. Sanitation in Asylums for the Insane with Special Reference to Tuberculosis.—The obligation of isolating the tuberculous insane in institutions is urged, as well as providing them with commodious, sunny and well ventilated quarters. Verandas should be provided for bed-ridden patients and all the precautions of personal hygiene exercised to prevent dissemina-

tion of the infectious material.

6. Some Results and Possibilities in Family Care of the Insane in Massachusetts.—A true estimate of the value of family care in Massachusetts has been prevented by the unsettled state heretofore of the authorities governing and directing it, causing a lack of continuity of policy and sustained support essential to its best development and proper test. The law limits the price paid for board to \$3.25 per week and requires that the State patients be visited once in three months at least, and these patients may be removed from their boarding place or returned to the State Hospital at the discretion of the board, if abused, neglected or found to be unsuited to this system. The system has had various vicissitudes, at one time the number increasing and then declining until recently, when it has remained stationary for a number of years. The largest number placed in any one year was 83 and the lowest 4, with a yearly average of 34.9. The average number during the whole existence of this system is 119.43, the largest number at any one time was 179, the smallest 94. Some of the patients, 53 or 45 per cent., have been out from ten to sixteen years; 29.1 per cent. have

been found unsuitable. Some remained less than one month, the average duration is one year ten and a half months; 10.9 per cent, were returned on account of illness, as only the quiet, tidy, tractable, healthy and helpful patients are available for this system, the hospital being obliged to retain the objectionable class of chronic patients. There has been no dearth of applications for boarders of this class and 83 per cent. of those inspected were approved, 313 families having received patients. The average duration of boarding in one family is three years one month. Very rarly have detrimental effects on the family been observed, but on the other hand beneficial, that is, the premises have shown greater neatness, house become better furnished, with other evidences of thrift, and in some instances an attachment to the patients has been observed. Eighty per cent. of the boarders are women. Nearly all forms of mental disease are represented in these patients, in the chronic stage of course. Few mishaps have occurred. A saving to the State of forty-seven cents a week per patient is shown, but this is not a fair comparison, as the patients would tend to lessen the hospital per capita by increasing the number under treatment and the work they might do, thus saving the employment of extra help. The advantages of the system have not as yet been demonstrated, still the author sees in it advantages that may be made manifest in the future.

7. Tent Life for the Demented and Uncleanly.—Twenty patients were selected of whom 60 per cent. were bed-ridden and most of them stupid and demented with no appreciation of their condition or surroundings. All of the patients showed a gain in weight within three weeks, except one who weighed the same; but he subsequently gained slightly, with a marked improvement in his habits, and when the camp was closed he had gained seven pounds in weight, had greatly improved mentally and was tidy in his habits. A number of other instances are cited where there was a marked improvement in the mental and physical conditions, as well as in the habits and general deportment and of the whole number only three continued filthy at the time of closing the camp. All manifested greater interest in their surroundings and occupied themselves in reading, games, etc. The average gain in weight was 13 3-5 pounds; the highest 50 pounds, the lowest 6 pounds. On the whole the experiment was a success and justifies

its further trial

8. Tent Life for the Tuberculous Insane.—The patients treated consisted of 40 suffering with tuberculosis in the Manhattan State Hospital, East. Forty square feet of floor space was allowed to each patient, ventilation was amply provided, as well as bathing facilities. Asepsis was carefully looked after and all means used to destroy the bacilli. The medical treatment was purely symptomatic, the chief reliance being placed on hygienic measures and diet in particular, four meals being served daily of plain, wholesome food with a liberal allowance of milk of good quality. the approach of cold weather, heating by means of stoves was provided and there was no difficulty in maintaining an even temperature, even in the severest weather. The results of the treatment are shown by reducing the percentage of deaths from 17 4-5 to 8 4-5 of the total number in the hospital, being the lowest in the history of the institution. Eighty-one cases in all were treated in this way; of these 55 showed an average gain in weight of 6½ pounds while 24 showed an average loss of 4 2-3 pounds and 2 no change in this respect; 8.64 per cent. of the cases treated recovered and were those in the incipiency of the disease, clearly showing the importance of its early diagnosis. The most apparent benefit was manifested in the increased appetite and ability to assimilate the food. Night sweats were conspicuous by their absence. Besides the benefit to the patients affected with the disease on admission, this treatment tends to prevent infection of other patients, who are in a more or less susceptible condition

owing to their physical condition incident to the attending mental disease. Further the mental condition of these patients was improved, although the majority were in a state of chronicity. The results attained have led to pro-

viding for an extension of the system.

9. Sympathetic Insanity in Twin Sisters.—In the sisters' prior life they had shown the tendency to be affected with the same ills almost simultaneously and their bond of sympathy was very strong under ordinary conditions. No history of heredity is noted, but on one becoming violently maniacal while away from home, her sister was sent for, who then at once became similarly affected and hospital treatment was necessary for both, where they were separated and not permitted to see each other; still their disease seemed to run a very similar course, an improvement occurring in each simultaneously, and a relapse occurred in each at the same time and each has become demented, in which condition they are at present.

McCorn (Amityville, L. I.).

BEITRAEGE ZUR PSYCHIATRISCHEN KLINIK

(Vol. 1, No. 3. November, 1902.)

I. The Measurement of the Motor Accompaniments of Psychical States. R. Sommer.

This is the only original article in this number of the Beiträge. The rest of the number is occupied by two book reviews. The author in his introduction to this study says that since the idea of psychophysical parallelism has become something more than a simple hypothesis, movements of expression, the effects of psychical states, must be studied by every means available. These motor reactions he takes up for study in three groups: First, muscular; second, vasomotor, under which he includes secretory, and third, electromotor; and his paper is accordingly divided

into three parts as follows:

I. Measurement of the Physiognomic Movements of Expression in the Musculature of the Forehead.—For the purposes of this study the forehead was selected as presenting the results of the activity of only two muscles (M. corrugator supercilii and M. frontalis). The contour of the folds in the skin of the forehead was studied by applying smoked paper. This leaves the soot marks where the creases occur and rubs it off in the intervals between them. The results of this method showed that these creases were the effects of muscular contraction and were most marked on the side which was morphologically the more strongly developed.

The rest of this section is devoted to the description of an apparatus for studying the forehead muscles in motion. It consists essentially of a disc applied to the forehead, the movements of which are transferred by levers and Marey drums to a revolving smoked disc where are two pens, one of which records the vertical, the other the horizontal movements.

2. Measurement of the Vasomotor Changes in the Skin.—For these measurements the usual means employed has been the plethysmograph. The author, however, makes the general criticism of the use of this instrument that the changes in the volume of the arm are an end result and not necessarily attributable altogether to vasomotor changes but in part probably to muscular contractions. He therefore considers it desirable to study the vasomotor changes as they present themselves in the skin alone. To this end the author has devised an apparatus. It consists of a capsule which is fastened on the forearm by removing the air from it, thus requiring no straps. Into the top of this capsule is fitted another with flexible walls having connected with it a tube containing illuminating gas which goes to a burner. Any change of volume in this second capsule, due to change in the quantity of blood in the skin, alters the size of the gas flame. The light

from this flame is thrown by a parabolic mirror on a selenium cell which is attached to a galvanometer. The deflections of the needle of the galvanometer therefore show the changes in the volume of blood in the skin. These changes may be recorded in a smoked drum by having the electric

current connected through a solenoid with a recording needle.

3. The Measurement of the Electromotor Changes in the Fingers .-This part, like the former two, is taken up mostly with the description of an apparatus consisting in the main of two electrodes on which the hands or fingers are rested and which are in circuit with a mirror galvanometer. The author concludes that the electromotor processes are stronger in the fingers than in the palm of the hand. These results are largely the effects of muscular contraction and in so far as they represent involuntary movements of expression they can be said to be an electromotor end result of a psychophysical process. WM. A. WHITE (Binghamton, N. Y.).

VOPROSSY NERVON-PSYCHICHESSKOY MEDITZINY

(January-March, 1902.)

I. Rudolph Virchow. I. SIKORSKY.

- A New Clinical Variety Idiophrenia Paranoides. I. Sikorsky.
 From the Domain of Psychopathic Literature. P. Preobrajensky.
 The Pathological Anatomy of the Nerve Cells as Applied to Mental Diseases. I. IVANOFF.

 5. Paralytic Rabies in Man as Modified by Antirabic Inoculations.
- I. HMELIEVSKY.

6. Suicide in Keeyeff. N. Oblonsky.

- 7. Traits of Character and Mimicry in Dementia of Alcoholic Origin. I. SIKORSKY.
- I. Biographical Sketch. 2 and 3, Psychopathic Literature.—Two very interesting contributions to the comparatively new study of the subject of psychopathic literature as exemplified by the type of writers whom Lombroso designates as mattoids—graphomaniacs. As is well known these are not all confined in lunatic asylums, and some of them not only occupy a more or less prominent place in certain European literatures, but are proclaimed as heralds of new tendencies hitherto unknown in the world's literature. Sikorsky coins for this class the new term of Idiophrenia (Greek, idios, one's own, peculiar, phrenes, mind), while paranoides points to the presence in these literary decadents of ideas of grandeur in connection with those of persecution so characteristic of paranoia, which these cases simulate very closely. The subjoined examples of some of the degenerate scribbling show clearly how perfectly sane and eminently intelligent critics may be betrayed into taking very seriously, senseless inanities of diseased minds that are dished out before the gullible public as the brilliant scintillations of the "moderns," the "symbolists," and similar rubbish.

 4. Pathological Anatomy of the Nerve Cells.—A history of the incep-

tion and development of the various methods employed in the study of the

nervous system.

5. Modified Rabies.—As based upon investigations of his own cases and those found in the literature of the subject, the author draws the following conclusions: (1) There is at times observed in persons bitten by mad dogs and treated afterward by Pasteur inoculations, a peculiar affection of the nervous system with the predominance of symptoms of meningo-myelitis in the thoracic or lumbar portions of the cord. (2) This affection bears the character of an infectious disease, as it is usually accompanied by a rise of temperature, at times by respiratory disturbances, and frequently by paralysis of the facial and oculomotor nerves; its duration is from one and a half weeks to two months, always terminating favorably. (3)

Its clinical history, its course and the analysis of the etiological data do not permit of its being classified with any known variety of meningomyelitis.

(4) The picture of the disease corresponds exactly with that of the paralytic variety of rabies in man. (5) In view of the above and also because of the common etiological factor we may assume with a great degree of certainty that we have here to deal with a paralytic, being a form of rabies which becomes considerably weakened in its intensity by the aid of antirabic inoculation.

6. Suicide in Keeyeff.—A continued article.

7. Traits of Character and Mimicry in Dementia.—A series of portraits of alcoholic individuals, showing the acquisition of certain characteristic traits undoubtedly due to the abuse of spirits with all its baneful consequences. Considering the prevalence of drunkenness—secret as well as open—this fact is one of immense importance. Many a writer's literary work carries with it the reflection of his spiritual self as influenced by the excessive indulgence in alcohol, and a close study of some of the pearls of the modern literature (special reference is made to the decadent school of writers) reveals a peculiar style which the author justly calls "alcoholic."

(April-June.)

9. Psychiatry and Psychology. Zieben. 10. White Dermography. P. Nikolsky.

II. Affection of the Motor Neurone in Tabes. M. LAPINSKY.

12. A Review of the Institutions for the Care of Insane in Russia.
A. Kotzovsky.

9. Psychiatry and Psychology.—An historical survey of scientific psy-

chiatry and its intimate connection with experimental psychology.

- 10. White Dermography.—It has long been observed by several investigators (Rayer, Käbner and others), that in certain individuals a trifling irritation of the skins causes blushing, which may last for a considerable time, and Dr. Jardin-Beaumetz has demonstrated a case of a woman on whose skin a phrase could be written which would remain in letters raised above the surface for many hours. In some cases the red color would gradually give way to a white line, a condition somewhat rarer than the former one. The author ascribes this phenomenon to the fact that in white dermographism the vasodilator nerves of the skin are insensible and do not respond readily to irritation, while the vasoconstrictor fibers are strongly and quickly irritated, thus causing contraction of the vessels and pallor of the irritated region. These results of irritation as applied to the skin are observed not only when the irritation is caused mechanically, but also, as verified by the author, when brought about by electricity and heat. Barthelémy found red demographism in epilepsy, hysteria, tabes, gout, exophthalmic goiter, disseminated sclerosis, general paralysis, and also in various skin affections as psoriasis, scleroderma, pityriasis, urticaria and others. As regards white dermography the author thinks it a rule in prurigo, and also in chronic eczema, erythema scarlatiniformum, pemphigus ichthyosis.
 - 11. The Motor Neurone in Tabes.—A continued article.

12. Insane Asylums in Russia.—A continued article.

(July-September.)

- 15. The Motor Neurone in Tabes.
- 16. The Insane Asylums in Russia.
- 17. Multiple Births. A. Inossoff.
- 18. Suicide in Keeyeff. A. Obolensky.
 - 15. The Motor Neurone in Tabes .- Some of the results of observations

and experimental investigations by the author are embraced in the following conclusions: There are cases of tabes in which the motor and trophic affections of the muscles are due not to a neuritis, but to a primary alteration of the cells of the anterior horns of the spinal cord. The following scheme presents the clinical and the pathological differences between the two varieties of tabes:

AMYOTROPHIC TABES WITH AFFECTION OF THE ANTERIOR HORNS.

The paralysis does not correspond roots. The paralyses and the atrophies are limited to regions connected with certain muscles supplied by certain nerves; within the affected area there may be healthy muscles.

The atrophies and paralyses are asymmetrical.

The affected muscles showed fi-

brillary contraction.

The pareses and paralyses are preceded by muscular atrophy; it is only with the appearance of the latter that the patient begins to feel weakness.

Electrically there is a quantitative diminution of irritability.

Microscopically we find atrophic changes of individual fibers in the affected nerves and pronounced al- horns remain normal. terations in the anterior horns.

The motor neurone affection is rather of an atrophic than inflammatory character and its course is subacute.

AMYOTROPHIC TABES OF NEURITIC ORIGIN

The various paralyses and atrowith the distribution of the nerve phies are localized in correspondence with the branches of individual nerve roots; both paralysis and paresis are to be found in the area supplied by the affected nerve.

> There is a certain symmetry observed in the affected muscles of the various extremities.

> No fibrillation in the attacked muscles.

Paralyses appear before atrophies.

There is observed a reaction of degeneration in the affected nerves and muscles.

There are degenerative changes in the nerve roots, but the anterior

The affection of the anterior horns is either diffuse or focal; in this latter we find no typical signs of poliomyelitic anterior; there is no inflammatory condition so characteristic of that disease. Both the focal and the diffuse affections may be met with in the same cord; we find at the same time contracted capillaries, which tend to cause anemia of the anterior horns, limited, however, because of the very small size of the capillaries, at first possibly to individual cells, or small groups of the same; so that the neighboring cells or collections of cells may remain quite normal and unaffected. The various paralyses, pareses and atrophies and in general the muscular affections of spinal origin originating in a certain segment of the trunk or extremities and accompanied by changes of pain or temperature sense in the corresponding portions of the body must be regarded as segmental affections of the spinal cord; on one hand there were attacked the anterior horns, on the other hand the sensory posterior fibers entering the central gray matter. These so-called "segmental affections" are demonstrable clinically in the simultaneous affection of the motor and sensory spheres of certain parts of the body. 16. The Insane Asylums in Russia.—An historical review and particular description of the most prominent insane asylums in Russia.

17. Multiple Births.—A rather curious attempt to classify multiplicity of births, anthropologically arranged as regards the population of Russia, as one of the symptoms of racial as well as individual degeneration.

18. Suicide in Keeyeff.—The greatest number of suicides occurred during the hot months of June and July; this fact goes far toward substantiating the proposition held by many neurologists that high temperature acts as an irritant to the nervous system which frequently results in attempted suicide; it is, however, the barometric pressure that seems to play the most important rôle.

ALEX. ROVINSKY.

MISCELLANY.

REFLEX CONVULSIONS IN GROWING BOYS AND GIRLS. E. S. Smith (Lancet,

Jan. 24, 1903.) Convulsive attacks occur in rickety and highly neurotic infants during teething and other reflex irritations. It is not so well known that they also occur as pure reflexes during worry in children about eleven or twelve years old, members of families of distinct neurotic tendencies. There is one symptom in common deserving attention, namely, habitually cold feet in these individuals. It usually provokes little attention, but, if disregarded, may thwart the best efforts of the physician in treatment. With these cold feet, the child's sensibility to chills is increased. He can offer no effectual resistance to the sudden changes of temperature. Digestive derangement follows, malnutrition, and weakness and injurious tendencies are irritated. The nervous system is then readily thrown off its balance. If such nervous conditions may be controlled in the infant, they certainly may be in the older child. Such nervous seizures are as harmless in the older child as in the younger child, and apparently leave the patient in no worse condition, but there are cases where the condition becomes so chronic and recurrent that hardly any appreciable excitable cause may exist to bring them about. It is therefore advisable that the children should have their health built up, and such sickness and general depression as coldness of the feet should always have attention. TELLIFFE.

The Patellar Tendon Reflex in Croupous Pneumonia in Children. M. Pfaundler (Münchener med. Woch., 1902. Vol. 49, p. 1,211).

From a study of 200 cases of croupous pneumonia in children Pfaundler found that in 27.5 per cent. the patellar reflex was absent, or diminished. From this study he concludes: (1) As a rule fever was well marked, but the absence of the reflex was noted in certain cases which were at the time non-febrile, and the sign occurred not uncommonly after the crisis, the temperature being normal or subnormal. (2) It is seen only exceptionally in children over ten years, and rarely in infants at the breast. (3) A relationship between the part affected and the condition of the reflex cannot be made evident. (4) Many of the cases showed severe general symptoms, especially an initial cerebral affection, whilst the mortality (5.4 per cent.), was rather high for that age-period. (5) It was particularly met with in strongly built and well-nourished children. (6) The course of the pneumonia in these cases showed no unusual deviation from the normal. (7) Apparently the sign arises early in the disease, and sometimes it was observed when the physical examination of the lung was quite negative. (8) As a rule the reflex returns during or soon after the crisis, and generally, though not always, at the same time on the two sides.

In 87 cases diagnosed as lobular pneumonia Pfaundler found that, excluding one moribund and one doubtful case, the patellar reflex was absent only on two occasions, and diminished on three, and in all of these

cases the consolidated patches were confluent. He is of opinion that the loss or diminution of the tendon reflex is due to the action of specific toxic substances on the nerves at the periphery and at the reflex center. The sign may be of service in the differential diagnosis of pneumonia from meningitis.

TELLIFFE.

THE CRIMINAL RESPONSIBILITY OF THE EPILEPTIC. John Punton (Med.

Record, Nov. 15, 1902).

The author draws the following deductions: (1) That epilepsy is a symptom of some brain disease; (2) that its continual presence tends toward mental deterioration; (3) that mental responsibility of the epileptic depends upon the extent to which the mind or self control has been impaired by the epilepsy; (4) that the legal test of insanity is not sufficient, as mental irresponsibility is not incompatible with a knowledge of right from wrong; (5) that epileptics are to some degree at least, responsible for criminal acts, especially when the epilepsy is produced by their own fault; (6) that criminal acts of epileptics appeal to medicine rather than to law for their proper adjudication; (7) that in all cases of murder in which epilepsy is proven the law should be amended to allow of like commitment to an insane hospital rather than to the penitentiary; (8) that the mental responsibility of the epileptic should be referred to a medical commission appointed by the court, which again may be referred to local or county medical societies to name its members.

Universal medical experience indicates that well established epilepsy is a sure sign of biological inferiority. But it is absolutely necessary to demonstrate in each case the extent to which mind control has been impaired by the epilepsy, as well as the existence of epileptic insanity. All authorities agree that irritability, impulsiveness and aversion to control are the marked characteristics of the epileptic psychoses. In true epileptic mania, the criminal act is usually unpremeditated, motiveless and accompanied by impairment of consciousness and temporary loss of memory. Homicide is its legitimate product.

W. B. NOYES.

ACUTE POLIOMYELITIS AND ENCEPHALITIS. F. E. BATTEN (The Lancet.

Dec. 20, 1902).

Upon the question as to what is the cause of the changes noted in these two diseases in the nervous tissues concerned, and especially as to the part in that cause played by thrombosis, the following points are offered. It has been stated by those who support the view that the condition is primarily inflammatory, that many observers have occluded the vessels of the spinal cord for varying periods, and examined the changes so produced, but, although they found marked chromatolysis of the nerve cells, they did not find perivascular exudation or hemorrhage. Furthermore, they state that Dr. Leonard Hill ligated the cerebral arteries in monkeys and the brains of these animals were examined by Dr. F. W. Mott at various periods after the operations, who found extreme chromatolysis of the cortical cells, but no inflammatory change or hemorrhage. Such an argument sounds almost conclusive, and would at once negative the view that there is primary thrombosis, but it must be remembered that obliteration of a large vessel is by no means necessarily comparable to the condition which is produced by thrombosis occurring in smaller vessels. Far more to the point are the experiments of Prevost and Cotard with regard to the changes which take place in an infarcted area. By injecting fine tobacco powder into the vessels, they succeeded in getting infarcts in various organs, and they proved by these experiments that congestion, hemorrhage, and exudation of cells were the early result of obliteration of

small vessels. Having therefore established the possibility of such a condition as is found to be present in these cases of acute encephalitis and poliomyelitis being due to a primary thrombosis, the next point to show would be that the pathological process may be limited to the distribution of a single vessel. If one therefore studies the vascular supply of the spinal cord it is found that the gray matter of the anterior horns receives its chief supply from branches of the anterior median artery, the white matter being chiefly supplied from vessels arising from the pia mater. The branches of this anterior median artery supply the whole of the gray matter of the anterior horns, but not that of the posterior horns. In the spinal cord from cases of infantile paralysis the line of demarcation between an affected and unaffected part is sharply defined and limited to the gray matter of the anterior horns—that is to say the area of congestion, or, in the later stages, of necrosis, corresponds very closely to the area of the blood-supply of the anterior median vessel. It cannot be asserted that the process is always thus accurately limited, for it is well known that the vessels in the ventral portion of the spinal cord and outside the gray matter are often engorged and possibly thrombosed, and again in the gray matter small areas of softening are found which do not occupy the whole of the gray matter. Such conditions are easily explicable, since congestion of vessels commonly occurs around an infarcted area and the localized softening in the gray matter is due to the thrombosis occurring in the smallest vessels. The microscopic appearances of the softening of the gray matter of the spinal cord correspond closely with that due to thrombosis of small vessels in the brain. The very frequent occurrence of anterior poliomvelitis in the lumbar sacral region seems to be another point greatly in favor of the view that the condition is primarily vascular, for it is well known that the gray matter of the anterior horns of the lumbar region is situated at a point most peripheral from its blood supply, i.e., the blood derived from the vertebral artery has to travel the whole length of the anterior median artery, and, further, it has been shown by Moxon that the reinforcing arteries of the roots do not readily assist the supply of that part of the cord. These, then, are the points in favor of the disease being due directly to a primary vascular thrombosis; in favor of the view that the disease is of direct bacterial origin may be quoted its prevalence during a certain period of the year, becoming epidemic, as in the present year, and its occurrence in several members of a family in its various forms, either cerebral or spinal, of which a most interesting example has been published by Dr. W. Pasteur. None of these points, however, are antagonistic to the view upheld by the author, for this infection only supplies the cause of the blood change. Furthermore, in cases of spinal infection that can be shown to be due to bacterial invasion, the changes met with are not limited to the gray matter, but affect gray and white matter alike. The author's arguments have been drawn chiefly from the pathological examination of the spinal cord, as the opportunity for examination of that part of the nervous system most frequently occurs. But what has been said in regard to the nature of the lesion applies equally to those cases in which the medulla, pons, cerebellum, or cortex is affected, the lesion being a primary thrombosis of the finer and terminal arteries. In conclusion, though there are many gaps to be filled up by further pathological investigation, he trusts that he has given grounds for considering cases of acute encephalitis and acute poliomyelitis as clinically identical; pathologically they are identical. The more frequent recognition of these cases of encephalitis will explain many cases of so-called meningitis in which recovery more or JELLIFFE. less complete takes place.

A Case of Epilepsy, Apparently of Nasal Origin. Robert Craig (Mon-

treal Med. Jour., April, 1902).

Patient, male, nineteen years old, had suffered from "nose bleed, head-ache and epileptic fits for five years." During the six months previous to treatment of naso-pharyngeal condition, which consisted of small ulceration in the right nostril on the anterior half of the septum, associated with a large septal spur pressing on the posterior half of the middle turbinal, and accompanying congestion in nose and pro-pharynx, the convulsive attacks became much more frequent and of increasing severity. Since removal of the obstruction, a period of one year, there has been no recurrence of headache, nose bleeds or epileptic attacks. Hack and others have reported similar cases exhibiting the relationship between nasal disease and epilepsy.

J. E. CLARK (New York).

THE SILENT FORMS OF EPILEPSY. William P. Spratling (N. Y. Med. Jour.,

Oct. 10, 1902).

The greatest medico-legal problem connected with epilepsy is encountered in its purely psychical forms, unaccompanied by any motor disturbance. No other disease of the nervous system calls for so accurate a knowledge of cerebral localization as epilepsy. The silent forms of epilepsy come from some disturbance in parts of the brain known as the "organs of the mind," presumably the frontal lobes. Two kinds of epilepsy may thus develop, one the psychomotor epileptic equivalent, the other the psychical attack pure and simple. These mental seizures are apt to occur in persons of a neurasthenic type. People who forget in a striking and unusual way, who disappear for long periods of time and who find themselves with returning consciousness in a distant place, undoubtedly suffer from epilepsy of this nature. They have done nothing violent, there has simply been a lapse in conscious operations of the mind without any violence on the part of the body. Cases of silent epilepsy are not infrequent and are of great medicolegal importance. W. B. Noyes (New York).

HYSTERIA AND ORGANIC DISEASE. Charles L. Dana (Med. Rec., Sept. 20,

The main objective stigmata and subjective symptoms of hysteria major are (1) the anesthesias; (2) the contractures; (3) the palsies and tremors; (4) the attacks, and (5) the peculiar mental state. The hysterical syndrome is oftenest associated with organic lesions due to trauma, but various symptom groups appear also with tumor of the brain, encephalitis, meningitis, multiple sclerosis, tabes and more rarely with inflammatory disease of the nerves. The different symptom groups are of variable stability. The anesthesias are the most mobile, fugacious and amenable to remedial measures. The paralyses indicate a deeper and more stable affection. They show a greater tendency to remain fixed. Contractures may be fugacious and irregular, but when established are even more obstinate than the paraly-They do not disappear during sleep or moderate narcosis. The following case is reported by the writer: A woman had jumped from a window while drunk, and on admission to the hospital was delirious and paraplegic. Autopsy subsequently demonstrated a fracture of the first lumbar vertebra, and of the lowermost segment of the sacrum. The injury to the cord was slight, involving only its posterior portion. The symptoms were flaccid paraplegia, absence of knee-jerks, and anesthesia to the third dorsal level on the left, and twelfth dorsal on the right. The right side of the face and tongue were anesthetic. There was total amblyopia of the right eye. A case of a man crushed in the Grand Central tunnel accident, sustaining fracture of the tenth rib, contusion of the right knee, and a severe

burn. Two weeks after leaving the hospital he developed a tremor and general nervousness, and failure of memory. He is unable to walk much and has vertigo. He has rigidity of the right hand. Spots of anesthesia over face. Another case of hysteria and tabes combined, the functional symptoms being evident by hysterical crying, hyperesthesia of the chest, and other sensory symptoms not explainable by tabes alone.

W. B. Noyes (New York).

MYASTHENIA GRAVIS. F. G. Finley (Montreal Med. Jour., July, 1902).

The author reports the details of an interesting case of this comparatively rare disease which was treated at the Montreal General Hospital. The patient, a male, forty-nine years old, no evidence of syphilis, alcohol very moderate, has always enjoyed good health up to the present illness. Occupation, engine driver. Eight to ten years ago had injury to scalp and severe blow on head in a railway accident, full recovery from same. Family history negative. Present illness began September, 1901, with weakness in arms, then of legs, and later in muscles of jaw. Difficulty in swallowing, particularly solids. Thickness of speech, and dribbling of saliva from lips, which was early noted. Loss of weight, attributed to inability to take sufficient nourishment. Symptoms vary in intensity from time to time, and patient is usually better in the morning than evening. Memory and intelligence are good. Motor power in arms and legs not diminished. Muscles medium sized and flabby. Inability to whistle well. Tongue protrudes to the right, slight tremor of same. Soft palate hangs to right and is flabby. Slight weakness of adductors of vocal cords, more on right than left. Difficulty in swallowing, at times regurgitation. Pupils, fundus, ocular muscles negative. Knee-jerks slightly increased. Plantar reflex normal. Slight thickening of radial arteries, abdominal and thoracic viscera normal. Temperature for sixteen days, while at hospital, subnormal (95 1-5 deg. F., to 98 1-5 deg. F.). Pulse 64 to 84. Marked changes from day to day, as to weakness, noted in the bulbar muscles. At times almost entire absence of weakness, no difficulty in swallowing or thickness of speech. Muscles responded readily to faradism, no diminution after repeated stimulation. Diagnosis based on weakness of bulbar muscles and marked variations of power

degree of weakness, greater on right vocal cord, etc.

J. E. Clark (New York).

A Contribution to the Treatment of Spasmodic Wry-Neck. George
R. Elliot (N. Y. Med. Jour., Oct. 11, 1902).

from day to day and improvement exhibited after night's rest, particularly of swallowing. Early involvement of jaw suggestive of pseudo type rather than true bulbar palsy, where it occurs in the more advanced stages. Slight degree of weakness, greater on right than left, in protruding tongue, les-

The writer analyzes a form of wry-neck which is purely a nervous disease. It is characterized by a spasm of the muscles supplied by the spinal accessory and sometimes by the upper cervical nerves. The patient is usually neuropathic and of bad heredity. The sternomastoid and trapezius muscles are the ones usually involved. The head is inclined to the affected side by the trapezius, the chin is raised, and the head is rotated to the opposite side by the sternomastoid an dtrapezius. The spasm is intermittent. These cases have not always been cured by nerve resection and muscle cutting. The author advises an apparatus with a chin piece, a rotating spring, and two uprights. It is movable and restricts the spasm.

W. B. Noyes (New York).

Some Observations upon Delusions, Impulsive Insanity and Moral Idiocy. Bernard Oettinger (American Journal of Medical Sciences, December, 1902).

The question of sanity should be based more on the individual's demeanor and conduct in its entirety, or the collective reaction to slight stimuli rather than upon expression of any single delusion, however

Impulsive insanity should include those forms of degenerative insanity wherein the subject is possessed of morbid propensities and impulses and wherein, if the latter be consummated by action, the same is undertaken without a clear motive, but because an irresistible impulse so to act is experienced. Moral insanity is a form of imbecility characterized by the absence or enfeeblement of those emotions which combat the inconsiderate gratification of egotism. What Pinel termed manie sine delire may be resolved into three classes: (1) Certain forms of degenerative insane states, impulsive insanity and moral idiocy, both as a rule unassociated with false beliefs; or where, like the aura of epilepsy, the hallucination has no causal relation to the reflex movement; (2) instances in which the subject is possessed by delusions, but these were slight and associated with reasoning power; (3) cases of active melancholia, in which the constant dread of something unknown but fearful is translated into a violent act. The idea of moral insanity was extended by Pritchard to include a moral perversion of the natural feelings, affections, inclinations and impulses, without any remarkable disorder or defect of the intellect and particularly without any insane illusion or hallucination. The writer believes that the phrases moral and impulsive insanity should be avoided. The best authorities today look upon the mental types which they represent as degen-W. B. Noyes. erative forms of mental alienation.

Urban Selection and Mental Health. J. A. Macpherson (Review of Neurology and Psychiatry, Feb., 1903, No. 2).

The author presents a short statistical note bearing on the physical changes of type consequent on urban selection. The first is an increased dolichocephaly, the second point bears on the variation in height, in some cities the country inhabitants are taller, in others the urban population. An increased "brunetteness" is thought to be a further result. The selected urban type then is tall, dolichocephalic, dark haired and dark eyed. Mentally it is vigorous, quick-witted, capable of endurance, and self-controlled. Fond of amusement, it is not readily overcome by excitement, and does not yield itself easily to excesses. As regards alcohol it ought to have undergone a special evolution. The immigrant fresh from the country is confronted by all the sordid features and must run the gauntlet of zymotic disease, alcohol, syphilis and tuberculosis. On the question of insanity it is not clear whether the author thinks that there is more insanity in urban populations than in the country. The tendency of the argument seems to be that the many factors in city life tend to raise the incidence of mental deterioration. JELLIFFE.

THE PROMINENT EYE. A. Haig (Med. Record., Oct. 11, 1902).

The underlying cause common to Grave's disease and minor conditions of prominent eye is high blood pressure, and this the author holds is due to the presence of uric acid in the blood. Only rarely do new growths or myopia cause prominence or retraction of the eye. The prominent eye is often met with in cases of high blood pressure (migraine), headache, enlargement of the thyroid occurs in most women during menstruation when the blood pressure is raised; the quick pulse is met with in all high blood pressure conditions. With the prominent eye is associated a puffiness or distended condition of the skin, which may later relax. Conditions which hinder the circulation through the lungs, such as bronchitis, asthma, and emphysema, increase the prominent eye; also coughing, straining, heavy exertion, or mental excitement. The prominent eye tells us whether there is high blood pressure, how long it has been there, and whether the heart has slowly and steadily hypertrophied or not. W. B. Noyes (New York).

THE DIFFERENTIAL DIAGNOSIS OF MULTIPLE SCLEROSIS. B. Onuf (Onuf-

rowicz) (Brooklyn Med. Jour., Nov., 1902). In speaking of the diversity of opinion as to the pathology of this disease, the author states that it may be due, in part, to various cases presenting differences in the anatomical process, or dissimilar stages of the disease having been observed. He suggests that a better understanding may be obtained by the careful analysis of a great number of autopsy cases with founded with multiple sclerosis. The pathological processes of the diffuse sclerosis, pseudo-sclerosis, syphilis, hysteria, general paresis, multiple softening foci, tabes, combined system disease, transverse myelitis and Brown-Séquard paralysis are most likely, according to his experience, to be conand pseudo type are much the same as in the insular form, but the latter is differentiated, anatomically, by localization, not being chiefly confined to the hemispheres. Thus, clinically, a preponderance of mental symptoms would be somewhat indicative of the first mentioned disease. Cerebral syphilis, in its multiplicity of symptoms, may resemble multiple sclerosis. A correct diagnosis, oftentimes, necessitating a careful general, as well as special examination. Although of value, too great stress should not be given to the subsidence of symptoms under anti-syphilitic treatment, unless rapid (two weeks) and with marked improvement. Multiple sclerosis, without treatment, oftentimes exhibits a similar, but less speedy tendency. Typical scanning speech, is strongly diagnostic, while nystagmus is not pathognomonic. If well developed, without ocular defects present, it points decidedly in favor of disseminated sclerosis. Because of their constancy, the author regards facial expression and mimicry, also emotional liability, as evinced by the great tendency either to laughter or crying, to be two symptoms of cardinal importance in differential diagnosis between insular sclerosis and syphilis; not general nor specific pseudo-paresis. Optic neuritis, often, only symptom in incipient stage of disease. May almost clear up later on. Syphilis usually attended with more profound retinal and choroidal changes than multiple sclerosis. Evidence of past iritis favors diagnosis of syphilis in doubtful cases. Seventh and eighth cranial nerves not uncommonly found affected in disseminated sclerosis. Multiple cerebral softening, at times, strongly resembles disease. Senility and vascular changes differentiate in favor of cerebral softening foci. The speech disturbance, emotional liability and dementia of bulbar palsy may simulate multiple sclerosis. Symmetrical bulbar atrophies, more gradual onset, and symptoms pointing to an involvement of the anterior horns and lateral tracts aid in forming a correct diagnosis.

J. E. CLARK (New York).

Angio-Neurotic Edema. W. E. Deeks (The Montreal Med. Jour., July, 1902).

Patient, female, eighty-three years, asthmatic, with chronic cardiac disease. Urticaria at times. Prior to angio-neurotic attack, health quite good, although taking suprarenal extract because of threatened cardiac edema which appeared upon cessation of remedy. On morning of attack, urticarial swelling under one eye disappeared quite quickly. At noon, while in usual state of health, patient became dyspneic; constant irritable coughing and swelling of face. Whole face, including ears, cyanotic and swollen. Eyes decidedly prominent and bulging. Tongue edematous, speech almost inarticulate from preceding cause. Marked swelling of parotid and submaxillary glands. Pulse not affected to any great extent. General pulmonary asthmatic condition. No febrile disturbance. Large veins of neck not engorged. Thrombosis of deep jugular veins associated with cardiac affection considered probable, but rejected because of immediate relief afforded by hypodermic injection of morphine and atropine. Cyanosis disap-

peared, and in few hours patient comfortable. In twenty-four hours the swelling of tongue and lips had disappeared. Case interesting because of locality; association with asthma, possibly with urticaria; and promptness of relief by morphine and atropine, etc. Suprarenal extract administration not supposed to have had any connection with causation of attack, because of immunity in its use, prior to, and since attack.

J. E. CLARK (New York).

Inequality of the Pupils in Thoracic Aneurism. R. C. B. Wall and

E. W. A. Walker (Lancet, July 12, 1902).

After discussing the matter at some length and citing a number of cases, with evidence based upon clinical observation and experiment, the authors sum up their conclusions as follows: The explanation ascribing the anisocoria which sometimes occurs in cases of thoracic aneurism to interference with the sympathetic, is unsatisfactory. On anatomical grounds: (a) because in the majority of cases there is no evidence of implication of that portion of the sympathetic nerve trunk containing pupil dilator fibers, and (b) because it is not established that sympathetic filaments supply the sac wall of an aneurism. Further, alterations in vascular conditions may be associated with alterations in the size of the pupils, low arterial tension being associated with large pupils, and vice versa, phenomena for which the spiral structure of the vessels of the iris is probably responsible, and, therefore, local inequalities of blood-pressure may be associated with inequalities of the pupils. Clinical evidence has shown that enlargement of pupils is often associated with diminution of the temporal and radial pulses on the same side of the body, and obstruction of the carotid artery on one side of the neck is associated with enlargement of the pupil on the same side. By experiment upon the carotid artery in rabbits it was found that its obstruction caused enlargement of the pupils on both sides, owing to the freedom of circulation at the base of the brain, and that injection of water into the carotid artery of a dead rabbit caused enlargement of the pupil on that side. In the human subject digital compression of the carotid was also associated with enlargement of the pupil on that side. Their final conclusion was that inequality of pupils associated with thoracic aneurism is usually due to inequality of blood pressure in the ophthalmic arteries resulting from the abnormal vascular conditions. JELLIFFE.

TREPHINING FOR BRAIN TUMORS. Joseph Ransohoff (Jour. of American

Med. Asso., Oct. 11, 1902).

Operable brain tumors are rare. Only six per cent. of all cases are suitable for operation. The writer reports two successful cases. The first had suffered from convulsions beginning in the foot, rapidly extending over the side, followed by unconsciousness. He had violent headaches and frequent attacks of vertigo. Fundus shows some papillitis. Operation showed a tumor over the right foot center the size of a hen's egg. Recovery, with occasional light epileptic seizures, and a slight paresis of the arm and leg.

A second case of removal of a solitary tubercle from the ascending frontal convolution on account of muscular twitching and occasional loss of consciousness. No headache at any time. The patient recovered, with only a moderate amount of weakness of flexors of thumb and fingers. To make a diagnosis of cerebral tumor without headache is unusual. Against 104 cases of brain tumor in which operations were successful, there are 157 in which the operation was unsuccessful. Subcortical tumors particularly ofter escape attention. If the dura and cortex are not involved headache often fails.

W. B. NOYES.

PATHOLOGY AND TREATMENT OF EPILEPSY. William H. Thompson (N. Y.

Med. Jour., Nov. 8, 1902).

Epilepsy cannot be defined as a convulsive disease, for convulsions are at most only occasional effects, not inherent adjuncts to epilepsy. Nor can it be defined as a cerebral disorder producing loss of consciousness, for even that is not invariable. Aphasia alone may be the only symptom. The fact of epilepsy does not depend at all on the number or on the variety of the symptoms, but solely on the question whether the symptoms are epileptic or not. Epilepsy is a specific diséase sui generis protean in its manifestations. The first and simplest symptom is part of the epileptic process as much as the latest and most violent symptom. The never varying element in epilepsy is suddenness. Epilepsy is the only sudden disease. first law of the physiology of the nervous system is that the beginning of every nervous action is always on the afferent side. A spontaneous, i.e., a primary motor efferent discharge is unknown in physiology. Why should it occur in epilepsy? It is by the constant repetition of the same recurring excitation that certain groups of neurones become disciplined to react uniformly to a certain definite afferent excitation. This implies the establishment of a definite inhibition. Inhibition is solely the resistance begotten by habit to any irregular efferent response. Epilepsy is a disease characterized by a sudden derangement of the normal regulative inhibition existing between cortical nerve centers, induced in the first instance by an abnormal excitation. This shifts the primary seat of epilepsy from the motor efferent to the sensory or afferent portions of the nervous structure. As regards treatment therefore all epilepsies should be regarded as caused by some source of abnormal afferent excitation. Such a cause may be intracranial focus of irritation following injury to the head, venous thrombosis in the meninges, following typhoid or scarlet fever, or sunstroke, and a long continued dosing of one-twenty-fifth of a grain of mercury biniodide, t.i.d., and the application to the nape of the neck of bromide ointment is advisable.

Irritation of the nose, tracts of respiration or deglutition are frequent causes of epilepsy, and can be treated. Over excitability of the throat leading to bolting of food may be treated by application to the whole pharynx of nitrate of silver, ten grains to the ounce, followed later by tincture of iodine. To prevent bromism in cases needing continued bromide, give cod liver oil and phosphorus, or reinforce and reduce the bromid by coal tar drugs, such as antipyrin. Auto-intoxication and toxemia in some form, whether alcoholic, uremic, are the commonest causes. Open air treatment is as much indicated in epilepsy as in tuberculosis. The writer claims a cure in 70 per cent. of the cases of epilepsy.

W. B. Noyes.

Alcoholic Epilepsy. T. D. Crothers (Journal American Medical Associa-

tion, Dec. 13, 1902).

The writer emphasizes the following facts: (I.) Alcoholic epilepsy is increasing rapidly in this country. (2.) It is a psychosis and neurosis which should be recognized, having distinct symptoms, the recognition of which is imperative in the treatment. (3.) When the toxic symptoms are convulsive and explosive and come on suddenly, the future of the case is very ominous and the warnings from these symptoms should be heeded. (4.) The connection between mixed drinks and these spasmodic symptoms is traceable and should be considered in the prognosis and treatment.

The cases are classified as follows: (1) The convulsive and maniacal types; (2) the demented and confused form; (3) the trance automatic and psychic classes. In the first, intoxication of a sudden

maniacal type is followed by muscular explosions of extraordinary char-

acter. These attacks are followed by profuse stupor and often convulsive twitchings of the voluntary muscles.

In the states of dementia and confusion epileptic symptoms are prom-The writer believes that the convulsive trembling and unconsciousness point to epilepsy which may be the cause instead of the effect. In the class of automatic trance and psychic cases certain blanks of memory occur, followed by automatic acts which the person never Narcotism by alcoholism or epileptoid symptoms may be found. Besides these there may be sudden alterations of personality and conduct and automatic trances. Thus a moderate drinker may perform some act of which he is unconscious and in an epileptoid state which may W. B. Noyes. be regarded unusual or insane.

EPILEPSY: ITS TREATMENT. Daniel R. Brower (Journal of the American

Medical Association, Jan. 17, 1903). Hygiene of the epileptic. This should be disciplinary, pedagogic, and dietetic. All stimulating narcotics should be eschewed. Differential care for the dullards and the over-bright should be carried out. The diet should tend to minimize nitrogenous food, permitting meat once a day, excluding

all indigestible foods, and cutting down fat and sugar.

Drugs. If bromides are used, vary their administration by changing the vehicle. For children the dose is a grain for each year of their life, not exceeding 20 grains three times a day of bromide of sodium for an adult. If this fails add fluid extract of Solanum Carolinensis, beginning with a halfteaspoonful, increasing to two. In cases of cardiac enfeeblement the fluid extract of *Adonis vernalis*, in dose of from a half to five minims may be added. Coal tar drugs may be used, or belladonna. For the anemic cases bromide of iron may be used.

If irritability of the bladder ensues,, bromohydric acid or bromipin may be used. If the bromide treatment fails borax in ten grain doses. Oxide of zinc in doses of three to five grains, or strychnine may be of service. Santonin in increasing doses may be used. Combinations of salicylate of soda and antipyrin may be used if bromides disagree. Nitroglycerine in W. B. Noyes.

certain cases is helpful.

PATHOLOGY OF TABES. L. Nageotte. (Presse Médicale, Dec. 10, 1902,

No. 49).

Tabes, the author says, is an inflammatory disease which attacks a certain group of sensory and motor nerve roots as they emerge from the subarachnoid space. The process is allied to a syphilitic meningitis. The lesion is not solely a syphilitic one, but there is an interstitial transverse neuritis of the nerve root that has traveled up from the meninges and involved the interfascicular connective tissue. The posterior nerve roots are first involved and then the posterior columns throughout. The shorter fibers seemed to suffer more than the long ones. There is a progressive atrophic change in each fiber with thinning of the myelin sheath. Later the myelin disappears, the axis cylinder persisting.

JELLIFFE.

Massage for Tabetics. M. G. Constentoux (La Presse Médicale, Dec. 6,

The author arrives at the following conclusions: (1) The employment of massage for tabes should be especially adapted for each particular case. (2) Massage though given with greatest care, and helpful in certain cases may be harmful to other cases. (3) It should be applied either by a physician acquainted with tabes, or by a masseur absolutely obedient to instructions. (4) Massage for tabes is indicated as follows; (a) for a general tonic; (b) as a means to combat certain sensory disturbances; (c) against certain complications. (5) Massage of the skin is useful in many of the sensory troubles, and also as a general tonic of extensive utility against nutritive changes. (6) The massage of muscles is without effect on the ataxia; it causes fatigue if too vigorous. It accomplishes little when there is paralysis or true atrophies. In slowly healing fractures in tabes it is valuable. (7) Passive motion is contraindicated when the joints are already too movable and when there is hypotonia of the muscles. (8) The active motions should be of a nature to re-educate the limbs. (9) Whatever be the conditions, the manipulations of massage should be gentle, and the seances brief when applied in tabes.

W. B. NOYES.

AUTOPSY IN A CASE OF ADIPOSIS DOLOROSA. F. K. Dercum and D. J. McCarthy (American Journal of the Medical Sciences, December, 1902).

The protocol of the autopsy was as follows: Superficial abdominal fat three and three-quarter inches thick. Loose in the fat were several hemolymph glands. The pia and brain were normal, except an abnormal arrangement of the third frontal convolution. The pituitary body was closely adherent to the sella turcica, which was converted in part into a tumor mass, which was an adeno-carcinoma. The thyroid gland was normal. The kidneys were in a condition of acute parenchymatous nephritis. There was an interstitial neuritis of the nerve filaments of the subcutaneous fat. The testicles were undeveloped. The symptoms that had been caused by that were obesity, large masses of fat accumulating on the abdomen and chest, which were extremely painful. As the deposit of fat grew the patient became excessively weak and easily fatigued. Four or five years before he had had an epileptic seizure, which recurred at intervals of a month or two. It was accompanied by an aura, biting of the tongue and unconsciousness. The knee-jerks were normal. There were no areas of anesthesia or hyperesthesia. The eyes showed very slight ptosis of the left side and some weakness of the internal rectus. Death was caused by ery-W. B. Noyes. sipelas.

TREATMENT OF EPILEPSY. L. Cerf (L'Anjou Médicale, 9, 1902, July).

The author reports in four cases of epilepsy treated by thyroid with such excellent results and he suggests that in all cases of so-called essen-

tial or idiopathic epilepsy that some form of thyroid therapy be instituted in the event of there being some thyroid dystrophy in the case.

Jelliffe.

Book Reviews

HANDBUCH DER PATHOLOGISCHEN ANATOMIE DES NERVENSYSTEM. Herausgegeben von Dr. E. Flatau, in Warschau; Privat Docent Dr. L. Jacobsohn, in Berlin, and Privat Docent Dr. L. Minor, in Moskau. First Abtheilung, Bogen 1-20. S. Karger, Berlin.

This is the first portion of a work on the pathological anatomy of the central and peripheral nervous system that is to be completed in 3-4 parts. As this portion is 320 pages, the completed book promises to be an import-

ant and extensive treatise.

In no branch of medical science has research been so active and profound as in that of the study of the nervous system, and the numerous observations made by pathological workers in many laboratories make it desirable that a collection of this scattered and discrete knowledge be made within the bounds of one work. This task the editors set for themselves, for in the preliminary announcement the names of Anton, Ballet, v. Bechterew, Benda, Brasch, Bruns, Cassirer, Cramer, Darkschewitsch, Elschnig, Friedimann, v. Gehuchten, Goldscheider, Heller, Hoche, Homen, Joachemsthal, Jolly, Luce, Lugaro, Mendel, Michaelis, Nonne, Oppenheim, Petren, Pick, Raymond, Rossolimo, Schlesinger, Stroebe and Weber, appear as collaborators. Surely an extensive and representative group of authorities.

The opening chapter deals with the modes of investigation of the nerv-

The opening chapter deals with the modes of investigation of the nervous system, giving at great length the details of technic. This is one of the best presentations of this subject yet given. It is contributed by Jacobsohn of Berlin. Particular stress is laid on the subject of artefacts and

their characteristics.

Dr. L. Michaelis gives a thorough chapter on the bacteriological in-

vestigation of the nervous system.

A very fine chapter is that of von Gehuchten's on the Pathological Anatomy of the Nerve Cell. It is well illustrated, splendidly written and an authoritative and modern exposition of our knowledge on this subject.

The general Pathological Anatomy of the Nerve Fibers is taken by Lugaro. In this chapter the important work of Kennedy, Ballance and Stewart is not considered;—certainly a serious omission. Lugaro also writes on the pathology of the neuroglia.

M. Nonne and H. Luce write on the pathological anatomy of the vessels. This is a masterly chapter, marred only by the author's almost slavish ad-

herence to German literature.

Chapter VII on the Diseases of the Bony and Membranous Brain Coverings, by H. Stroebe, is just begun in this fascicle. From the publishers' standpoint, the work is most excellent, and if the succeeding parts are as comprehensive and able as this one the work will certainly meet with the success that its merits demand.

Jelliffe.

GESCHLECHT UND KRANKHEIT-GESCHLECHT UND ENTARTUNG. By Dr. P. J.

Möbius. Carl Marhold, Halle.

These are two contributions by this well known author to the sub-

ject of the differences in the character of the sexes.

The first brochure discusses in an interesting manner those diseases that are peculiar to men or women and also those affections that are apt to be more common in one sex than in the other. He makes two divisions. Diseases with natural sex differences and diseases associated with social sex differences. Under the former are included as diseases in males, hemo-

philia, muscle weakness, diabetes, leucemia, hay fever, brain tumors and congenital heart lesions; as female, chorea, whooping cough, torticollis, goiter, myxedema, Basedow's disease, scleroderma, chronic articular rheumatism, hysteria, migraine, manic depressive insanity, alcoholic neuritis.

In the second group he distinguishes as female belongings in the way of disease, cholelithias, acute yellow atrophy, wandering kidney, gastroptosis and trachoma. Man seems to suffer on account of his social position as all of the rest of the diseases that flesh is heir to passed to his account. The deductions are both interesting and suggestive.

deductions are both interesting and suggestive.

In the second brochure a number of facts bearing on various anomalous degenerations are discussed. Cases of hypospadias, gynomastia, hermaphroditism, etc., are described and their philosophical relations pointed out. Both brochures are of interest and of not a little practical import.

R. Brown.

DER ACHILLESSEHNENREFLEX UND SEINE KLINISCHE BEDEUTUNG. Von Dr.

A. v. SARBO. S. Karger. Berlin.

This is a small brochure of 43 pages, devoted to the study of the Achilles jerks in health and disease. The first II pages are occupied with the details of the modes of investigation, and in the following pages the character of the Achilles jerk in hemiparesis, syphilis, mercury poisoning, articular atrophy, lead poisoning, alcoholism, ischias, tabes, paresis, and poliomyelitis are recorded.

The brochure is well considered, and is an excellent and convenient

summary of knowledge of this reflex.

JELLIFFE.

THE AMERICAN YEAR BOOK OF MEDICINE AND SURGERY. Medicine. W. B.

Saunders & Company, 1903.

The year book for 1903 is much better in every way than in previous years. Not that the room for improvement was so noticeable, but that the general excellence of the work has been enhanced by a greater attention to the details of the abstracts furnished and a few new chapters have been added that have greatly enriched the book. This is notably true in the chapter devoted to Physiological Chemistry edited by W. Jones and Reid Hunt.

For the neurologist the main interest will center about the chapters on Nervous and Mental Diseases, and Legal Medicine. The former contributed by Dr. A. Church, the latter by John Marshall and J. H. Rhein. Dr. Church has collected most of the truly good things done throughout the year, particularly in the domain of neurology. The ab-

stracts on Insanity are not representative.

The work is improved also in its general attractiveness. The paper, print and binding are all that could be desired. Altogether it is the best year book published in the English language, and is a worthy addition to the library.

Walsh.

Mews and Motes

Dr. Paul Flechsig has been appointed an honorary member of the Jurien University of Dorpat.

Because of the illness of Dr. Anton Bunn, of Munich, S. Hans Gudden will deliver the lectures in psychiatry.

PROF. REMAK has been appointed Professor Extraordinary.

PRIVAT DOCENT E. SCHULTZE (Andernach) has the title Professor.

Dr. L. Pierce Clark has been appointed Consulting Neurologist to the Manhattan State Hospital at Central Islip.

COCAINE IN GEORGIA.—At a recent trial in Atlanta, Ga., it was brought out that more than 3,000 prescriptions for cocaine had been filled in two months.

Dr. E. Hitzig, of Halle, because of a progressive affection of the eye, will be relieved from duty until September, after which time it is announced he will resign as Director of the psychiatric and nerve clinic. Dr. Hitzig founded at Halle the first psychiatric clinic in 1885. He was born in Berlin in 1838, in 1875 went to Zurich and in 1879 went to Halle.

Congress of French Alienists and Neurologists.—The thirteenth Congress of this society will assemble at Brussels on August 1, 1903, under the presidency of M. v. d. Bruggen. The program will include the discussion of Catatonia and Stupor, introduced by Mr. le Dr. Claus of Antwerp; Histology of General Paresis, by Mr. le Dr. Klippel; Treatment of Agitation and of Insomnia in Mental and Nervous Diseases, by Dr. Trenel. Dr. J. Crocq is the Secretary, to whom all communications should be addressed, 27 Rue Palmerston, Brussels.

American Neurological Association.—The Council announces that the Twenty-ninth Annual Meeting will be held in Washington, D. C., in conjunction with the Congress of American Physicians and Surgeons, on May 12, 13 and 14, 1903. There will be one session daily from 9 a. m. to 1 p. m. The sessions will be held at the Arlington Hotel. The Council desires to call attention to that part of Article VII of the Constitution which reads as follows: "The reader of a paper shall not exceed twenty minutes in the presentation of his paper, and no one shall speak longer than five minutes in the discussion of a paper. Members must send the titles and abstracts of their papers to the Secretary at least six weeks before the annual meeting." The Council announces that Article VII will be strictly enforced, and that titles and abstracts received by the Secretary after April first cannot appear on the program. The annual dinner of the Association will be held on the evening of May 12th. The Council recommends the following candidates for election to active membership. Dr. D. I. Wolfenstein, Cincinnati; Dr. J. M. Mosher, Albany; Dr. Harvey Cushing, Baltimore. The Council announces that in view of the increasing expenses of the Association, the dues for 1903 are ten dollars.

THE

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OF

Nervous and Mental Disease

Original Articles.

THE GEOGRAPHICAL DISTRIBUTION OF INSANITY IN THE UNITED STATES.*

BY WILLIAM A. WHITE, M.D.,

FIRST ASSISTANT PHYSICIAN, BINGHAMTON STATE HOSPITAL, BINGHAMTON, N. Y.

When I was invited by your Society to address you on the geographical distribution of insanity in the United States my ideas on the subject were extremely chaotic. 'I had vague notions of the possibility of formulating laws that would express the relationship between insanity and latitude and longitude, temperature, precipitation, etc., and I felt that a diligent study of statistics would be rewarded by the emergence of such laws. Similar ideas, I think, would quite naturally occur to any scientific man not especially acquainted with the statistical study of sociological phenomena. Confronted at the outset by the fact that the proportion of insanity varies greatly in different regions of the United States, what more natural than to ascribe such variations directly to the differences in man's physical environment in these localities?

From time immemorial variations in climate and in weather conditions have been supposed to produce profound effects upon man's conduct, and such expressions as the "depressing effects of heat" and the "stimulating effects of cold" are common in our

^{*}Read before the National Geographic Society, Washington, D. C., Feb. 6, 1903.

every day conversation, and I believe that all of us have a more or less clearly defined idea that the physical and mental characteristics of the different races of men are to some extent an expression of the effects of the climatic and geographic conditions under which they live. This general conception was particularly fathered by that great English historian, Henry Thomas Buckle, who, in the opening chapters of his "History of Civilization in England" traces in detail the effects of the four great physical factors—climate, food, soil, and the general aspect of nature upon the characters of individuals and upon the growth of races and the progress of civilization.

There has consequently been fostered a general tendency on the part of statisticians and those engaged in the study of abnormal mental conditions, to follow along these lines with a view to establishing relations of cause and effect.

If I, in coming before you tonight, am not able to present to you such laws as I originally dreamed of, clothed in all the beauty of mathematical formulæ and demonstrating beyond doubt the precise effects of each climatic and geographic factor upon the prevalence of mental disease, I at least hope to be able to show why it not possible to do so, and I feel assured that my results may be just as valuable as if it were.

The social organism is extremely complex and any effort to reason from the association of two or more conditions to the probable causative relations between them is always dangerous, and when figures are suborned for such purposes the results are notoriously inaccurate. With the elaborate means used of late years by the governments of all civilized nations for the collection of statistics it is but natural that the figures obtained should be applied to all sorts of social conditions, and thus we are treated by the authorities to elaborate tables which show the month, day, and hour when suicide is most prevalent in a certain country, the season of the year in which crimes of violence reach their maximum, the effects of temperature, barometric pressure, humidity, wind velocity and precipitation upon various phases of conduct such as attendance at school, infractions of discipline in prisons, clerical errors in banks, etc., etc.

In view of these facts it is my function to-night to inquire whether the prevalence of insanity in the various regions of the United States can be shown to have any definite relation to any one or more of these environmental conditions; whether insanity is more prevalent at certain elevations above sea level, or between certain degrees of latitude; whether it prevails more especially in regions of a certain average temperature and barometric pressure, or, on the other hand where the mean humidity is high or low, and further, if these conditions cannot be shown to have a causative effect upon its distribution—what has?

Let us start our inquiry by a study of a map of the United States, upon each State and Territory of which the ratio of insane to 100,000 population is indicated in accordance with the census returns for 1880. We are at once confronted with a condition of affairs which is so well marked that when I first saw it I was very much surprised. The greatest proportion of insanity is in the northeast, in the New England and Middle States, of which New Hampshire, Vermont, Massachusetts, Connecticut and New York all have one insane person to less than 400 of the population. If from this center of greatest prevalence of insanity we draw a line in any direction—west, south, or southwest—we see that no matter which way we go we find a steady decrease until we strike the Pacific slope. A slight interruption in the continuity of the decrease is noted in Michigan as we go west, but is, I think, of little consequence. As we go south along the coast Delaware appears as a marked exception. This is due to the fact that previous to the organization of the Delaware State Hospital in 1889, no statistics of insanity were reliable. The insane were county charges and the care given them was so atrociously bad that every one took pains to conceal cases occurring in their families. Despite these minor variations the decrease of insanity as we go from the northeastern part of the United States, south, west, or southwest, must strike you as being remarkably uniform and constant. This uniform decrease only takes place if we start from this northeastern center. If, for instance, we drop a line from any of the northwestern States, as Idaho, Montana or Minnesota, we find no uniform results, and if we go south from the Dakotas we will find that the proportion of the insane actually increases. The notable increase when we strike the Pacific slope I will speak of later.

If we now attempt to explain this condition of affairs by the topographical or the climatic conditions we are at once met by

insuperable difficulties. If variation in temperature is alone responsible, why does not the proportion of insane diminish as we go south from the Dakotas as well as from the New England States? Or, on the other hand, why should Maine have a smaller proportion of insane than any other New England State? Montana, which is as far north as Maine, has a higher ratio than the States immediately south of it. If meteorological conditions are determining factors why do we not find a marked variation in the proportion of the insane in the States bordering on the Great Lakes? Here we have conditions quite different from anywhere else in the United States. This region, a large area of which is occupied by these immense inland seas, is directly in the course of the greater proportion of storms which come from the northwest and pass through here on their way to the Atlantic coast; sudden variation in temperature, barometric pressure and wind velocity are the rule and with the immense areas of evaporation, fogs and rains are frequent and the percentage of cloudiness unusually high (66%), still there is nothing in the proportion of the insane to call our special attention to this region.

I might continue in this wise, but it is only necessary for me to call your attention to the general results of such reasoning. They are these. The variation in the proportion of insanity in the different States is regular and uniform while both geographic and climatic conditions are not, but, on the contrary, differ greatly in different parts of the United States, as, for instance, in the region of the Great Lakes just mentioned. If, therefore, we would explain these figures we must seek a cause as uniform as its effects. This cause, or more properly, these causes, are the same causes that make for civilization, the same that make for permanency and organization of social institutions, the same that make for concentration of population in great cities, the same in short that make for progress in its broadest sense.

Before proceeding to the elucidation of this proposition let us for a moment return to the consideration of some first principles.

I did not intend to convey the idea, by the remarks I just made about the influence of climate on conduct, that no such influence could be demonstrated. On the contrary I think it can be and in fact has been. Dexter¹ has recently shown this in a most admir-

¹Edwin Grant Dexter, A.M., "Conduct and the Weather," Psych. Rev., Vol. II., No. 10, May, 1899.

able and exhaustive study of the effects of climate on different phases of conduct. For instance, his studies show that as humidity increases assaults, necessity for prison discipline and the number of arrests for insanity decrease, while the data also show an increase in these same occurrences when the barometer is low.

Granting for the nonce that these various meteorological conditions could actually produce insanity, they could not account for the uniform variation of the proportion of the insane in the different States to which I have called your attention. Weather changes are transitory and conditions that are inimical to mental health are quickly followed by others that are highly beneficial. This is especially true of those regions of the United States where the proportion of insanity is high. The ratio of insane in the semi-tropical regions, which are relatively free from the sudden changes of weather so common in the northeastern and northern central regions, is comparatively low. If we turn to the seasonal influences the same criticism applies, though the changes take a somewhat longer time. As regards climate and seasons, Berkley,² an eminent American authority, says, "These are factors of very minor importance in the evolution of insanity. The harmful effects of heat in the south are more than counterbalanced by the more prevalent abuse of alcohol in colder regions. In a general insane asylum, where the middle and lower classes of the population are received, a study of the records show that a larger number of admissions in one year may occur during the winter, whereas, in other years the same holds good for the spring, summer or autumn. Hence, one is obliged to conclude that the seasons have little to do with the evolution of insanity."

In the last analysis, however, the effects of all these agents, which collectively I have spoken of as constituting man's physical environment, upon his mind must be only secondary, mediate and not immediate. If we will study the effects of any one of them, for example, temperature, humidity, altitude, we will find them expressed in terms of respiration, pulse rate, evaporation from the cutaneous surface, blood pressure, etc. Effects which I grant you are potent, but which nevertheless are not primarily mental.

This whole matter reminds me very forcibly of the learned

²Henry J. Berkley, "Insanity: General Etiology," Reference Handbook of the Medical Sciences, Vol. V.

judge who could not understand why the expert called upon to testify as to the mental condition of the defendant, should have measured his feet. The medical profession has been largely responsible for this conception, especially our misguided friend the gynecologist. This gentleman has insisted that all forms whatsoever of mental disease affecting the female were traceable to an affection of the uterus or its appendages, and has devised all manner of operations to relieve such conditions. True, the insane female who may have a local pelvic condition which is amenable to surgical interference is just as much entitled to the relief that can be obtained from that source as her more fortunate sister, and it is quite conceivable that the relief of a local condition which was painful or debilitating by reason of frequent hemorrhages, or other cause, would place the organism in a better condition to rally from any abnormal state. But the sort of stuff that mind is made of is not to be found in the abdominal cavity.

This brings us again to the basis of our argument. If we are to seek for adequate causes to explain the conditions to which I have directed your attention we must seek for mental causes, not physical ones.

If we look back over organic nature we shall see that in the progress of evolution the nervous system has come to play a progressively more and more important part until we get to the higher animals, the vertebrates, in which the brain comes to be of paramount importance.

Still, in the lower races of man, although the brain is of such great importance in the struggle for existence, that struggle is, after all, in the main and relatively a physical struggle. It consists largely of collecting food which is often ready at hand in the tropics, of pursuing and killing game, and often of personal encounters with his fellowman, as a result of which the conquered is killed or reduced to slavery. When we get to civilized man, however, the picture is different. Here the struggle for existence has become an essentially mental struggle and success is a function of intellectual capacity. I can in no better way illustrate the severity of this struggle than by calling your attention to the fact that it takes twenty-five years of preparation now-a-days before a young man is considered equipped to cope with his fellows.

The brain then becomes, as it were, the storm center in the

organism. Here, in the habitation of the mind, do all the problems of subsistence meet their solution, and here also do all those mighty emotions which ever and anon stir the soul, take their origin. It is here in the brain that vaunted ambition has its sway, and here that the sweet pains of love tune one soul in harmony with another.

The mind, delicately adjusted as it is to its environment, responding as it does to the slightest changes therein, occupies a dangerous position and becomes at once liable to great stress and to the multiplicity of disorders that result therefrom. The savage in his simplicity does not know what it is to suffer from the cares and worries which are the daily portion of the average European, and it is little wonder that the latter, beset by all manner of disappointments and vexations, should more frequently break down in mind than his less gifted brother.

If you have followed me thus far you will note that in my attempt to account for the geographical distribution of insanity in the United States I have discarded the influences of the physical environment as being efficient causes because of their indirectness, and have appealed to the immediate results of mental stress, the results of the contact of man with man in the struggle for existence; in short, the results of that struggle itself as exemplified in civilization.

If my contention is true that insanity is the result of the stresses incident to the progressive civilized state, it must be possible to educe further proof of this by a study of some of the phenomena that accompany civilization. We would thus expect to find that in those localities where civilization was furthest advanced, where the social institutions were stable, where class distinctions had crystallized, in short, where the stresses of intellectual life were greatest, the proportion of insanity was highest. Let us see if this is so.

One of the most marked results of civilization is the concentration of population in certain areas. Let us study this condition in the United States with reference to the distribution of insanity. The census for 1890 shows that for the different regions of the United States the population per square mile is as follows: North Atlantic Division, 107.37; South Atlantic Division, 32.98; North Central Division, 29.68; South Central Division,

sion, 18.94; Western Division, 2.58. The North Atlantic Division, comprising the New England States, with New York, New Jersey and Pennsylvania, has more than three times the number of inhabitants per square mile of any of the other divisions; in fact, more than all the rest put together. Of these States Rhode Island, the smallest, has the greatest density of population, with 318.44 to the square mile; then comes Massachusetts with 278.48, Connecticut with 154.03, and down the coast, New York with 125.95, New Jersey with 193.82, and Pennsylvania with 116.88. From this center of density the proportion of inhabitants to the square mile diminishes regularly in every direction. If we go south we find Maryland with 105 and Delaware with 86 per square mile, until in the extreme south we find but 30 or 40. Westward from Pennsylvania, however, we find a belt bordering the Ohio river, containing Ohio with oo, Indiana with 61 and Illinois with 68 per square mile, and from here the diminution is rapid to Louisiana with but 24. Minnesota with only 16 and the extreme west, where the proportion is less than one.

Here you see we have an almost exact parallel with the distribution of insanity.

Closely connected with this peculiarity of civilized communities to concentrate in certain areas, in fact, a part of the same phenomena, is the growth of great cities. The eleventh census shows that the percentage of the population of the United States living in cities of 8,000 or more inhabitants, for the different regions were as follows: North Atlantic Division 51.58; North Central Division, 25.91; South Atlantic Division, 16.03; South Central Division, 10.45; Western Division, 29.99. Here again we see the same parallelism between the degree of manifestation of a phenomenon of civilization and the proportion of insanity. The North Atlantic Division contains almost twice the percentage of urban population of any of the other divisions, and here as we know we find the highest percentage of insane.

If we calculate the proportion of insane per 100,000 in all cities of the United States containing 50,000 or more inhabitants we will find that in 1880 the ratio was 231.6, as against 183.3 for the whole country, while in 1890 the ratio was 242.7, as against 170 for the whole country. Thus we find that the ratio of insane in cities of this size has not only increased in the decade from

1880 to 1890, but that the ratio for the whole country has decreased. It is also significant that, while in 1880 there were only 35 cities containing 50,000 or more inhabitants, in 1890 there were 58 such cities. We further find that of these 58 cities 26, or nearly one-half, are located in the North Atlantic Division. Of these twenty-six 6 are in Massachusetts, 7 in New York, 5 in New Jersey, 5 in Pennsylvania, 2 in Connecticut, 1 in Rhode Island, and none in Maine, New Hampshire and Vermont, so that our findings thus far are still further harmonized by these additional facts, for the density of population in Maine, New Hampshire and Vermont is very much lower than for the other States in this region.

If now we study the movement of population during the past century we meet again the same confirmation for our views. Mayo-Smith³ makes the statement that in 1790, 95 per cent. of the population were on the Atlantic seaboard, with an average depth of settlement at right angles to the coast of only 255 miles. The stream of population spread westward along three lines, one the valley of the Mohawk, one from Virginia southwest into Kentucky and Tennessee by way of the Appalachian Valley, and one over the Alleghenies to the Ohio river. This latter course was the principal one, and from the junction of the Ohio with the Mississippi we find further westward migration occurring along the valleys of the Missouri, Arkansas and Red rivers. This course of the westward spread of population has been maintained, for, though valleys furnish the natural highways for migration, when railroads come to be built they are built in the valleys and the general course of events is not materially changed thereby.

See how closely these facts correspond with the distribution of insanity. From the northeastern coast States—Massachusetts, Connecticut, New York and New Jersey—there is a progressive decrease southward along the Atlantic coast. There is also a decrease as we go southwest along the Appalachian valley, but we find the ratio of insane continues high in the Virginias, Kentucky, Tennessee and North Carolina, and does not show a marked falling off until we get south of these States. Similarly, if we follow the Ohio valley we find the ratio of insane continues large in Ohio, Indiana and Illinois.

⁸Richmond Mayo-Smith, "Statistics and Sociology."

We still have, however, some high ratios unaccounted for, viz., Missouri and Iowa west, Michigan, Wisconsin and Minnesota north. All these States are in the North Central Division. Let us compare the different divisions of the United States on the basis of their respective increases in population during the decade from 1880 to 1890. The figures are as follows: North Central Division, 4,878,928; North Atlantic Division, 2,984,480; South Central Division, 1,985,657; South Atlantic Division, 1,204,999; Western Division, 1,129,641. Thus we see that the increase in population has been by far the most rapid in the North Central Division, this territory has increased approximately 2,000,000 inhabitants more than any other. Let us now turn to the individual States and see what the figures show. The States in the North Central Division which have increased in population the most are in the order of their increase: Illinois, 747,629; Nebraska, 603,-399; Minnesota, 519,069; Missouri, 510,262; Ohio, 473,856; Michigan, 451,170; Kansas, 430,167; Wisconsin, 367,420; Iowa, 287,156. The only other States in the Union that have increased at any such rate as this are New York, 911,173; New Jersey, 313,103; Pennsylvania, 972,962; Massachusetts, 454,432; Texas, 642,357; Arkansas, 325,344; Georgia, 204,002; Washington, 266,-999, and Oregon, 258,300.

The significance of these figures seems to me quite evident; they show that the stream of population has continued west of the Mississippi, and the high rate of insanity in Iowa and Missouri is therefore accounted for, as these States both adjoin Illinois, the western limit of the Ohio valley lying merely on the other side of the Mississippi river. You will see also that we have incidentally thrown light on the high ratios north. In the three States in this region, Michigan, Wisconsin and Minnesota, there has been an increase in population in the ten years from 1880 to 1890, of one and one-third millions.

Of all these States Nebraska alone seems to be somewhat exceptional. Although its population has increased rapidly its ratio of insanity is rather lower than we would expect from comparing it with those States where the increase has been correspondingly marked. Of these States Kansas is the only one as far west as Nebraska, and Kansas has a ratio of 125.7 per 100,000, while Nebraska has but 88. It is significant in this connection that Kan-

sas is more directly in the line of traffic from east to west, and a glance at any recent map of the United States will show that many more railroads course through it than do through Nebraska. As both of these States are in the main agricultural, the higher ratio of insanity in Kansas would seem to me to be the result of the degenerate dribble from the great railroad lines as they pass west from the congested centers of population in the east.

The only reports of the railway mileage in these two States I have been able to obtain are one under date of 1893, which shows Kansas to have 8,900 miles of railroads, thus making it the second State in the Union in this respect, and one a year later in 1894, shows Nebraska to have but 5529.22 miles of railroads.

It would seem, therefore, that my contention that insanity increases in proportion as the stresses incident to the struggle for existence become mental stresses, is borne out by the facts. The frontiersman who takes his family and goes west to open up new territory, engage in legitimate agricultural pursuits, and grow up with the country, is pretty apt to be of hardy stock, and insanity, if it appears at all, comes in later generations. It is different, however, with those States that have great mineral wealth. Here the attraction appeals to all the wandering, unsettled rifraff of the country, who hasten to the newly discovered fields in the hope of acquiring a fortune quickly. Arrived there they yield to all the seductions of intemperance; vice and disease wreak their ravages upon a predisposed soil, and our ratios show a corresponding increase. This is the situation with California. This State, and to a somewhat less extent, the whole Pacific coast, is still suffering from the effects of the "gold fever" of '49, and its citizens are paying the price even "unto the third and fourth generations." In this connection it is interesting to note that the mining States and the States of the Pacific slope, viz., Montana, Colorado, Arizona, Nevada, Idaho, Washington, Oregon and California, all show a much greater number of male than female insane, a condition that prevails nowhere else in the country, with the single exception of Minnesota, and it has arisen here almost wholly in the decade from 1880 to 1890, during which period the State has increased in population over half a million. Minnesota also has large lumbering interests, and conditions in a lumbering region are similar to those in a mining region. In the normal order of things we expect to find a slightly higher percentage of insanity in the female sex, but the "get-rich-quick" fever attracts more men than women, and mining districts as a rule are deficient in their proportion of women. This state of affairs has apparently not yet been recovered from in California. We must also remember with reference to California in particular that it is a coast State and suffers from the effects of immigration, and that the percentage of insanity is invariably higher in the foreign born than in the native population.

This law of the increase of insanity in the oldest settled districts and its decrease in the newly settled districts was well stated by A. O. Wright in the Proceedings of the National Conference of Charities and Correction, in 1884. He said: "A very powerful cause for the increase of insanity in this country was, so far as I know, first pointed out by the writer in 1881, before the census of 1880 had been tabulated, in the Annual Report of the Wisconsin State Board of Charities and Reform, and was stated in debate at the National Conference of Charities and Correction at Madison in 1882. Having made a census of the insane under public care in Wisconsin, the writer, on reducing the number by counties to the ratio to the population of the several counties, was astonished to find here a general law: That the older settled counties had the largest ratio of insane to the population, and that the ratio steadily decreased and reached the smallest ratio in the pioneer counties on the north. This seemed to show that a new country has a smaller proportion of insanity than an old country.

"When the Compendium of the Census of 1880 was published, the writer, from the numbers then given, immediately calculated the ratios to the population and arranged the States and Territories geographically instead of alphabetically." From the figures thus obtained he concludes that "... allowing for exceptional cases, the proportion of insanity decreases as you go toward the newer settled States, from about one in every 350 of the population in Massachusetts to about one in 1900 in Colorado."

Wright, however, does not go into details nor discuss the causes that have led to this condition of affairs, except to say: "The reason of this I think to be that new settlements are made by a selected population, mostly young and middle-aged people of sound minds and bodies. The insane are left behind, as are also

those people of bad organizations from whose numbers the most of the insane will come. The new countries, therefore, have a small proportion of insanity at the start, and furnish a small proportion of insanity in the first generation.

"The only exception to this is in the case of the Pacific slope and a few other localities, where masses of homeless men, with few women and children, have gone in search of work or of wealth; where the vices of drunkenness and licentiousness, with the irregularities and the hardships of life in mining or lumbering camps, and the excessive fluctuations of fortune, have caused an excess of insanity. In these cases, it is, however, to be remembered that this is a disease of mature life; and, if we add the proper proportion of children who would be found in an ordinary community, and who rarely have insanity, we should at once halve the ratio of insanity in such communities.

"But, in ordinary settlements, where the settlers found homes, and live under the ordinary conditions of life, the ratio of insanity in the first generation is small, because they are, as the insurance men would say, 'selected lives.' In the second generation, all the complex and varied causes which produce insanity have been at work; and the second generation has a much greater ratio of insanity than the first, and so on for several generations, when the balance is restored, and the regular rate of insanity is reached."

After all this, however, Wright says: "It is often claimed that insanity is a disease of civilization, and that it is increasing because civilization is increasing. This I think to be a mistake." Although this is not a very happy way to express it, it seems to me that our figures prove just that, or, rather, if they do not prove that insanity is the necessary result of civilization, they at least prove that the civilized state offers those conditions in greater number which bring it about, and so if the connection be not one of necessity it is at least one of fact. Instead, therefore, of attempting to account for insanity by altitude, temperature and the various other elements of the physical environment, we should only consider these factors as important because of their influence in creating conditions favorable to the growth and concentration of population and the evolution of the social organism. Even here this influence is often secondary, or accidental. As regards this whole matter of the influence of the physical environment on

population I can do no better than quote Mayo-Smith,4 who, in answer to the question, "How far can the statistics of distribution be said to contribute an answer to the question of the influence of physical environment upon population?" says:

"Statistics show us, in a large way and on a grand scale, the general influence of land, climate, and natural forces upon population. The plains attract, the mountains repel. Cold regions are unpopulated; moist and warm climates are fatal to human life. Commercial position attracts cities; navigable rivers are natural highways and are utilized in the migrations of the human race; an indented sea-coast is favorable to settlement and colonization. Statistics confirm the general observations of history. Levasseur, after a long survey of the topography of France and the history of its population, says that at all periods Paris has been the attractive pole, and the mountainous region of South France the repulsive pole of population.

"But it is absurd to seek by statistics a direct mathematical relation between population and land. The population of a country is not dense exactly in accordance with its topography. Plains do not always have a dense population, and mountains are not always barren. Population does not increase or decrease regularly, according to distance from a certain parallel of latitude or longitude. There is no direct proportion between the degrees of temperature or inches of rainfall, and the number of inhabitants in a certain district. In this respect many of the statistics distributing population to topographical features or natural relations, such as those of the Tenth and Eleventh Census of the United States, are the merest vanity. One searches in vain in these elaborate tables for any illumination. Such influences are not direct, but indirect, Altitude, temperature, rainfall, influence population because they affect the economic resources necessary for population. We must always remember that economy is the basis of social organization. The economic is the fundamental side of civilization. forces control human life in this way. Statistics, by showing the distribution of population, disclose the harmony between population and nature which is mediated by economic relations; and these are, on the one side, the result of natural forces, and on the other, the conditions of human existence.

"We must also remember, in studying the distribution of population, that there are commonly many influences at work, some of them economic, others historical and political; and that it is often extremely difficult to disentangle them. We ought, therefore, to expect from statistics, not exact data, but only general indications of the influence of natural forces. The density of population in England, for example, is due partly to the richness of its soil, partly to its mineral resources, and partly to its commercial advantages; but it is due also in part to its insular position, which has given it peace and stable government for generations, and to the energy and enterprise of its inhabitants, which have made the little island the center of a world empire. It is impossible for statistitics to disentangle these different influences. It can only confirm the observations of history. Who could explain that oasis of population, in the great western plain of the United States, called Utah, if he did not know the history of the Mormons? Why should the sterile mountain-tops of Nevada be populated? might be asked by one who did not know the history of gold and silver mining. The coast swamps of the United States would probably be uninhabited did not the population of the United States include a large proportion of negroes, who are proof against pestilential fevers. Race explains, in this case, what physical geography would leave inexplicable.

"Finally we must remember that all these natural influences are much more powerful over primitive than over civilized man. As Spencer says, 'The earlier stages of social evolution are far more dependent on local conditions than the later stages. Those societies such as we are most familiar with, highly organized, rich in appliances, advanced in knowledge, can, by the help of various artifices, thrive in unfavorable habitats; yet feeble, unorganized societies cannot do so: they are at the mercy of their natural surroundings.' Spencer finds here, also, the explanation of the fact that so many tribes of savages have made no manifest progress during the long period over which human records extend. Statistics observe man only in an advanced state of civilization, when he has been able to free himself to a certain extent from the influence of natural forces, or at least to neutralize them. By clothing and improved shelter man habituates himself to almost any climate, and by sanitary knowledge he makes places formerly uninhabitable safe for human life. In pursuit of wealth, of political independence, of religious freedom, he will risk exposures which would seem to be entirely unnecessary. By improved methods of agriculture man often renders districts, formerly uninhabited, or at best only sparsely settled, capable of sustaining large populations. In early times regions covered with forests are thinly inhabited. Civilized man cuts down the forest and turns the land into arable fields. Lowlands, which in early times were at the mercy of the sea or uninhabitable on account of fevers, civilized man, by canals and dikes, renders fertile plains. So also, by means of fertilizers, by rotation of crops, by improved ploughing, by the use of machinery, sometimes by irrigation, dry and sterile plains are made productive. Even from year to year changes in agriculture, or in the prices of agricultural crops, may render it expedient to change arable land into pasture, or pasture land into arable: and either process, if continued, must influence the populationsupporting capacity of the country. An example of this is seen in the changing of arable land to pasture in Ireland, and the turning of cattle farms into game preserves in Scotland.

"In the civilized state man often makes use of a country without any reference to its agricultural capacities. He seeks the minerals under the soil, either for his own consumption or for export; he turns clay into pottery; he utilizes water power for his factories; he seeks barren coasts for fishing or gathering seaweed; he establishes trading posts in the desert, or in unhealthy localities; in other words, he seeks his gain without reference to climate or soil. In modern times the improved means of transportation have still further increased man's command over nature. He is no longer held to rivers and valleys as natural highways, but can seek the quickest and most direct route. Cheapness of transportation gives him command over the resources of the world. In this way he can carry on the work of production in any place he likes, without regard to its food-producing capacity. The people of England import three-fourths of the bread they eat. This has the effect of enabling man to concentrate his efforts in places most favorable to the production of the kind of wealth which is demanded. It enables him also to choose climates favorable to his health, as the English seek the Mediterranean, or consumptives of the east seek the dry air of Colorado. Man's intellectual and emotional desires lead him to seek large cities, and this he is enabled to do by the fact that he can carry on his occupation independent of the food supply. This is especially true of occupations demanding intellectual effort.

"It will be seen, therefore, from all these considerations, that man is still subject to the environment, but the development of his power over nature has rendered the cord which binds him down more elastic. He is still subject to nature, but has at the same time, to a certain extent at least, subjected her."

Thus far my discourse has dealt with:

- I. The untenability of any hypothesis founded solely upon climatic, meteorologic, or topographic conditions to explain the facts of the distribution of insanity in the United States.
- 2. The necessity of assuming primarily a mental cause to explain these facts and the nature of that cause, viz., the mental stresses incident to the progressive civilized state.
- 3. Now as a third line of argument I will take up the discussion of certain collateral evidence, that is, evidence taken along other but related lines and leading to the same conclusion.

Suppose we first examine into the statistics of suicide. Morselli, in his admirable work on that subject, comes to the conclusion that those sections of Europe show the highest percentage of suicide where the Teutonic element is predominant. Ripley, in his excellent work, "The Races of Europe," has examined this proposition critically and with very interesting results.

If, for instance, France is studied, we will find the greater proportion of suicide in the north, where the Germanic race is represented in greatest numbers. Similarly we find here also the highest divorce rate. But more remarkable still, we find evidences of the highest degree of culture. In this same region the greatest number of artists were born to whom were granted awards by the Paris Salon, and here also were born the highest ratio of men of letters. If now Italy be similarly studied we find that its different regions are distinguished in much the same way as they are in France, by a preponderance of certain phenomena in certain localities. In comparing the two countries Ripley closes his criticism by saying, "The effect has been to emphasize once more the enormous preponderance of artistic genius all through the north, from Tuscany to the Alps. How does this coincide with our previous

deduction concerning France? It seems, perhaps, to corroborate the relation of Teutonism to art, until we secure the fact that all northern Italy is overwhelmingly Alpine by race as compared with the artistically sterile south. Couple with this the fact that in reality Teutonism is a negligible factor in Italy, physically speaking, and that precisely the same ethnic type which is so fecund culturally in Italy, is in France, the one localized wherever art is not; and all doubt as to the predominant cause of the phenomenon is dissipated. We see immediately that the artistic fruitfulness in either case is the concomitant and derivative product of a highly developed center of population. Contact of mind with mind is the real cause of the phenomenon. It is not race but the physical and social environment which must be taken into account."

Morselli himself recognized this fact for he not only reaches the conclusion that "It is those countries which possess a higher standard of general culture which furnish the largest contingent of voluntary deaths," and "The proportion of suicides in all Europe is greater amongst the condensed population of urban centers than amongst the more scattered inhabitants of the country." But in concluding his work he sums up the whole matter in the following words: "... whoever has followed us in the long analytical course which we have pursued, ought now to be convinced of the connection between competition and social evolution, and the inclination towards suicide. Suicide increases amongst people according to their degree of civilization, not so much because in the high development of the cerebral organism the needs which must be satisfied increase, as because the brain shares more largely in the struggle."

I need only call your attention to the frequent association of suicide with actual insanity, or at least with an abnormal mental condition for you to see the bearing of these results on the problem in hand.

Pauperism is another allied condition to which I would direct your attention. The census of 1880 shows that there were then 66,203 paupers in the several almshouses of the country. Now pauperism is to an extent a symptom of mental defect. The individual who, unless absolutely incapacitated by physical disability, so far fails in the struggle for existence that he must be supported at the public expense, is certainly suffering from some form of

mental defect. F. H. Wines, the special agent of the census office for the collection of the statistics of the defective, dependent and delinquent classes at the tenth census, says about pauperism, "The law which governs the distribution of pauperism in the United States (and which, we believe, has not been suspected by any student of the subject—at least I have never seen any reference to it) is brought out as clearly by the census of 1850 as by that of 1880, and it is confirmed by every census that has been taken. This law is as follows: The ratio of paupers to the total population diminishes alike from north to south and from east to west. In other words, if New England, or the principal New England State (Massachusetts), be taken as a starting point, it matters not in which direction a line be drawn, the largest amount of pauperism. relatively to the population, will be found to exist in Massachusetts, and the smallest in the State farthest removed from Massachusetts; while the intervening States will exhibit, on the whole, and with scarcely an exception, a gradual decline in something like the degree of their removal from the extreme northeast." As clearly as Mr. Wines defines this law it is rather strange that he did not discover the practically identical condition relative to the insane.

We have one other state of affairs in the United States that is worth while looking into. I refer to our large negro population. The ratio of insanity in the negro population is smaller than in the white population, being as I to I,069 in the former, and I to 505 in the latter. (Census 1880.) Although this is so it is generally admitted that the percentage of insanity has been gradually increasing since the Civil War. Berkeley⁵ says on this point, "Before the Civil War there were few or no psychoses among them, and such organic degenerative diseases as syphilitic insanity and dementia paralytica were practically unknown. Today in communities where many are collected, as in Washington or Baltimore, the percentage of insane negroes, not to mention idiots and imbeciles, is already fully up to that of the Caucasian races with whom they are associated, and bids fair to surpass it.

"The negro has been thrown upon his own physical and mental resources and has entered the strife for existence as an inferior; he is syphilized, alcoholized, his food is ofttimes unsuitable . . . his surroundings are usually unhygienic, and tuberculosis finds in him an easy prey. No wonder is it that under these cir-

⁵Ibid.

cumstances we have in our asylums an ever-increasing number of idiots, of imbeciles, and of all types of the dementias from the colored race."

There are, however, some extremely interesting facts relative to this increase. The percentage of colored insane increases rapidly as we leave the natural home of the negro and go in any direction. In other words, as soon as the negro goes north and enters into active competition with the white, who is mentally his superior, he succumbs in the unequal struggle. So in Georgia where we find the greatest number of negroes, there was one insane negro to 1,764 of the colored population in 1880, while in New York the ration was 1 to 333, or almost exactly the same ratio as for the white population.

Then again if we take the southern States alone, viz., Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Tennessee, Texas and Virginia, we find the ratio of colored insane is I to I,277, while for the whites in the same territory it is I to 456. For the remainder of the United States the ration of colored insane as shown by the tenth census was I to 542, while for the whites it was I to 520. The ratio of colored insane in the United States minus the southern States, is then almost exactly the same as the ratio for the white insane.

It seems that all the lines of evidence I have followed up lead to the same conclusion; they are mutually confirmatory of the general law that the proportion of insane is highest where we find the greatest congestion of population, and therefore, where the stresses incident to active competition are most severe. Our inquiry thus far, however, has been nothing if it has not been an inquiry into the causes of insanity, and I think I may fitly close by a general discussion of causes with a view to indicating some general conclusions relative to the comparative influence of these mental stresses I have been discussing in the actual production of insanity.

If we will take up any annual report of an institution for the insane and turn to the table giving the causes of insanity in the several patients under treatment we will find assigned such causes as these: "business anxiety," "death of mother," "disappointment in love," "domestic troubles," "excessive study," "loss of property," "political excitement." How many of us but have suffered at

^{6&}quot;A Treatise on Mental Diseases."

some time or other from one or perhaps all of these so-called causes of insanity? Certainly we have all had business worries; certainly we have all lost property at some time, otherwise our good fortune is phenomenal; certainly we have all been subject to political excitement many times, and all of us presumably have lost a dear friend or relative, perhaps a father or mother. Dr. Carlos F. MacDonald says very forcibly on this subject: "... that substantially every individual at some time during his life is exposed, in many cases repeatedly, to many of the so-called exciting causes of insanity, both mental and physical, and yet, despite this fact, we find that sanity is the rule,—insanity, the exception."

In ascribing these causes what has been done is simply this—the particular set of conditions that happened to maintain at the time the patient was attacked with insanity has been tabulated as the cause of that attack, whereas the true cause was in all probability far removed from these which were in reality only accidental contemporaries. In reality the true underlying condition in all these cases for which such causes are assigned, is the predisposition to insanity.

Predisposition to insanity may be either inherited or acquired. The former is more generally recognized and is what is referred to when insanity is said to be hereditary. Of all causes of insanity heredity is recognized as being by far the most important and as being most frequently present. The average for all countries has been estimated at from 60 to 70 per cent. This, I believe, as a matter of fact, falls below the truth. But any one who is at all familiar with the collecting of statistics must know how impossible it is for them to fully represent the facts in such a matter.

Next to hereditary predisposition comes acquired predisposition as a factor in causation, and the two most important agents in bringing about this acquired predisposition are generally acknowledged to be, first, alcohol, and second, syphilis, both of which, however, may act as true exciting causes at times. It is further conceded that both of these causes are much more prevalent in civilized communities, and in fact seem to be fostered by that irregular life which the active struggle after wealth necessitates.

The inadequacy of predisposition alone to account for insan-

ity, especially acquired predisposition due to alcohol, syphilis, and tuberculosis without the element of mental stress, is well illustrated by the condition of the American Indian. Sorely afflicted as he is by the diseases and vices of civilization, his tendency is to an outdoor life, and as his land has disappeared and he has become physically incapacitated, the Government has supported him, so that his sufferings have been in the main physical and not mental. Careless, slovenly and improvident, he does not know much of worry for the morrow, and so we find that among his race "insanity is of rare occurrence." ⁷

Without wearying you with further figures I will simply call your attention to the new light in which our conclusions now appear. Insanity is most frequent in the older civilizations, in the more thickly settled communities, in urban centers, in short, where competition is most active. Here the weakling, the man whose mental faculties are not quite up to grade, who enters the struggle handicapped by a poorly equilibrated mind, goes to the wall. He is the victim of heredity. Here are bred all the vices which only a high grade of intelligence can call into being, stimulants, narcotics, drugs of all kinds are available to help the overburdened on their way, until at last they react and bring ruin and desolation. The victims who fall a prey to these temptations are the victims of an acquired predisposition.

Of these two varieties of causes heredity is by far the more important. While civilization furnishes the environment that makes a bad heredity doubly dangerous, still it is the heredity which is the prepotent factor and not the environment. A bad heritage is always a source of danger and its possessor can never know when the environmental conditions may appear which will make its latent activity kinetic.

No people in the world are freer than we are from the taints of vicious inheritance. Inhabitants of the most glorious country on earth, a country whose future for greatness, and power, and good, seems to have no limit, let us see that we make the best possible use of the bounties nature has showered upon us with so prodigal a hand.

But power and greatness are double-edged; they cut both

[&]quot;The Civilized Indian, His Physical Characteristics and Some of His Diseases," by A. D. Lake, M.D. Trans. N. Y. Med. Soc. 1902.

ways, and already we are threatened with the dangers they have brought in their wake. The off-scourings of all Europe are hastening to our shores for that wealth they expect to find ready at hand, and today 50 per cent. of the nearly 25,000 insane of New York State are foreign born. The result of this great influx of defectives must of necessity have a constant leavening effect on the whole population. The danger from this source, however, is as nothing compared to that from war, the greatest curse that can afflict a nation.

In war it is not the defective that goes down to death, but the flower of a nation's manhood, and if modern theories of heredity are correct their place can never be filled—once gone they are gone forever, while the maimed, the diseased, the imbeciles and degenerates, unable to sustain the hardships of campaigning, stay at home and help populate the country with their ilk. I believe one of the principal reasons for this country's prosperity lies in its freedom from foreign wars, and I am convinced that no more terrible calamity could happen to it than to be engaged in one.

If we can control these two sources of evil successfully I am sure that internal affairs will so shape themselves as not to seriously interfere with a future which I believe can today only be dimly imagined, a future which will outshine the glory of ancient Rome as good outshines evil.

THE CHANGES FOUND IN THE CENTRAL NERVOUS SYSTEM IN A CASE OF RABIES WITH ACUTE MENTAL DISTURBANCE.¹

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The pathological anatomy of rabies has been studied by numerous observers, both in the human subject, and in various animals, notably in the dog and in the rabbit. The results of all coincide in showing that the poison of the disease spends its force chiefly upon the nervous system, the changes described being hyperemia and dilatation of vessels, smaller or larger hemorrhages, round cell accumulation both in the sheath of the smaller vessels and in the perivascular spaces, degenerative changes in the nerve cells, local areas of softening, and meningitis in different portions of the central nervous system, but usually most marked in the bulb. The process according to Golgi is to be considered as an acute encephalo-myelitis. The part of the nervous system most affected has seemed in some cases to bear a relation to the location of the infecting bite, Schaffer having found profound changes in the anterior horn of the cord in the lumbar region of the corresponding side in a patient bitten upon the leg, while in another person bitten upon the arm, the cervical region of the same side was specially affected. The anatomical changes described have, however, been in the main such as are observed also in other diseases. Babes has called attention to the presence especially in the bulb, of collections of round cells grouped characteristically about the nerve cells of that region, to which he has given the name of "rabic tubercle," and to which he attaches great diagnostic importance. As far back as 1872, Pollailon and Nepveu in a case of rabies found the Gasserian ganglion infiltrated with round cells, and compressed, but this lesion does not seem to have been considered at that time of much importance. In 1800 and 1000 Van Gehuchten and Nélis, in a series of articles, called attention to the changes which they had observed in a number of cases of rabies. in the ganglia of both cranial and spinal nerves, and which they considered as specific. These changes consist in round cell inva-

¹Read before the Philadelphia Neurological Society, February 24, 1903.

sion, and especially in the proliferation of the endothelial cells lining the capsules in which the large nerve cells of the ganglia are placed. This proliferation may go on to the complete destruction and disappearance of the nerve cells, the capsules being filled with round cells, presenting in some instances an appearance not unlike an alveolar sarcoma. These changes are said to be most characteristic in the dog, less so in man. The matter was speedily taken up by other observers, and in the dog and the rabbit at any rate the changes described have been thought to be characteristic. For their production the action of the fresh virus, and the complete evolution of the disease seem necessary, and Van Gehuchten and Nélis have considered them of diagnostic value only in street rabies. Sano examined the ganglia from a case of human rabies, but failed to find in them the changes described as characteristic by Van Gehuchten and Nélis, while Crocq, after a thorough study of the subject, is not convinced of the specificity of either the ganglion lesions or the rabic tubercle of Babes, though he admits that each may have very considerable diagnostic value in a suspicious case. In this country the subject has been specially studied by Ravenel and McCarthy, who found the changes described by Van Gehuchten and Nélis, in the ganglia of a number of dogs and rabbits, of one cow, and in one human being. Dr. McCarthy has, I believe, also reported some additional cases in man, though his paper has not yet appeared in print.

So far as I can ascertain no one else in this country has as yet published the results of an examination as to the presence or absence of the lesions claimed to be specific in a case of human rabies. The following case came under the observation of the writer during the past fall.

R. T., white, a farm laborer thirty-two years old, addicted to the use of alcohol, but to what extent not ascertainable, about August 15, 1902, being at the time intoxicated, was bitten on the hand by a dog which had been acting strangely, whose mouth he was attempting to open, as he explained, to find out whether the animal was mad or not. The dog in question was said to have been bitten by another dog which is stated to have been mad, and to have also bitten several other dogs and a cow. There is no record as to an examination of any of these animals, but the cow is reported to have remained well. The dog which bit R. T. was killed shortly afterward, and no examination of his body was

made. The patient, R. T., having listened to numerous comments upon the occurrence, and having had the symptoms of rabies repeatedly detailed to him by his neighbors, grew nervous and depressed, gave up his work, and began to drink heavily. Upon November 8 he became excited and violent, tore his clothing, is said to have "barked like a dog," was unable to swallow, and took neither food nor drink from that time on. He was brought to the New Jersey State Hospital at about midday November II, tied hand and foot. At this time he was extremely restless and excited, kept constantly in motion, secreted a great quantity of saliva, and was absolutely unable to swallow. He did not seem to have any definite delusions, hallucinations or illusions, and in an interval of comparative calm told the attendant that he had hydrophobia and hated to die.

On account of the questionable history, however, the case was regarded as being most probably one of acute excitement supervening upon alcoholism. Nevertheless, as the patient was in a condition of extreme exhaustion an unfavorable prognosis was given. This was speedily verified by his death at 9.30 the same evening. An autopsy was performed at 2.30 P.M. on November 12.

The macroscopic findings were: Adherence of the dura along the posterior part of the longitudinal fissure, with thickening of the pia-arachnoid in the same region, moderate congestion of the vessels of the meninges, and to a less extent of those of the brain, adherence of the lungs, and congestion of their bases, and congestion of the kidneys. The gastro-intestinal tract showed no special change. Portions of the brain and spinal cord were immediately forwarded to Dr. Ravenel at the Pepper Laboratory, with the request that he inoculate some rabbits for me. This he kindly did with the result that each of the two animals used developed typical paralysis of the hind limbs on November 31, and died on December 3, after the paralysis had ascended to the fore limbs.

There were taken for microscopical examination, portions of the cortex from the paracentral, frontal and occipital regions, and from the cerebellum, sections of the brain axis at different levels from the lower medulla up into the internal capsule, pieces of the spinal cord from different regions, the Gasserian ganglion, and several spinal ganglia, besides parts of the lung, heart, liver, spleen and kidney. The sections of the nervous system were stained by methylene and toluidin blue, by Held's method, by carmine, hematoxylin and eosin, the Wolters-Weigert, and the Marchi methods. Most of the large cells of the paracentral lobule, of the bulbar nuclei, of the anterior horns of the spinal cord, and of the columns of Clarke, stain diffusely, showing no granules. Many of them contain a deposit of dark pigment, and in a few there is displacement of the nucleus towards the periphery.

Throughout the whole nervous system, there is dilatation of

small vessels and much round cell accumulation both in the perivascular spaces, and in the sheaths of the vessels, these changes being most marked in the brain axis, but also evident in the cortex, and in the cord. In various locations there are small hemorrhages, notably in the vagus and hypoglossal nuclei. A careful search for the rabic tubercle of Babes, shows in a few places a grouping of round cells about the nerve cells. This is plainest in the vagus nucleus, in one of the arcuate nuclei, in the external acoustic nucleus, among the deeply pigmented cells of the substantia nigra cruris, and in the optic thalamus.

In the Gasserian and spinal ganglia there is great capillary dilatation, and the spaces between the cells are filled with a large number of round cells. There is slight proliferation of the capsular endothelium, and the nerve cells appear shrunken in some places, but the changes present can hardly be considered as characteristically those described by Van Gehuchten and Nélis. There are numbers of large pigmented bodies, apparently degenerated cells distributed throughout the ganglia, notably in the Gasserian.

Neither the Wolters-Weigert, nor the Marchi methods show the presence of degenerated nerve fibers.

The heart muscle shows beginning fatty degeneration, the liver and spleen are greatly congested, the lung shows congestion and escape of erythrocytes into the alveoli, and the kidney is intensely congested, and shows slight swelling of the epithelium of the tubules.

A review of the findings in this case shows that the lesions agree in general with those which have been previously described in rabies, but while strongly suggestive in a case with so suspicious a history, taken alone without the animal inoculations, they would hardly justify a positive diagnosis.

None of the changes found are characteristic of rabies alone, but each may be present also in other diseases. The lesions of the ganglia considered as specific by Van Gehuchten and Nélis have been found by Crocq in the vagus ganglion of a child dead from diphtheria, by Spiller in a case of endothelioma of the Gasserian ganglion, by Ravenel in the ganglion of a cow with the so-called "forage poison" (epizoötic), and by Burr and McCarthy in a case of neuritis. In a case of acute ascending paralysis, Spiller found general perivascular round cell deposit and small hemorrhages throughout the nervous system, while in the lumbar region of the cord the ganglion cells were surrounded by round cells, and many of them were destroyed, giving a picture much like the rabic tu-

bercle of Babes. Sano, in a case of rabies in a woman fifty-one vears old, failed to find the ganglionic changes of Van Gehuchten and Nélis, or the rabic tubercle of Babes. The case here reported was complicated by alcoholism, which would account at least in part for the perivascular round cell deposit, the thickening of the pia-arachnoid, and the pigmentary degeneration of the nerve cells, The examination was made so long after death, however, that it is hardly possible to form a definite opinion as to the cell changes.

From the study of the literature of the subject, together with that of this case, it seems justifiable to conclude that neither the ganglionic changes of Van Gehuchten and Nélis nor the rabic tubercle of Babes is absolutely characteristic of human rabies. though their presence in a suspicious case may be of considerable diagnostic importance. The value of these changes in the nervous system of a dog suspected of rabies is not yet entirely decided, but when found in a case otherwise suspicious they are at least strongly suggestive, and they should invariably be sought for, at any rate until we acquire some more definite information upon the subject.

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PSYCHOMOTOR HALLUCINATION AND DOUBLE PERSONALITY IN A CASE OF PARANOIA.

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EXAMINER OF THE INSANE, PHILADELPHIA HOSPITAL.

Bernard W., a German by birth, was admitted to the Philadelphia Hospital, June 18, 1896. He was then thirty-five years old and had followed the trade of boiler-maker. His family history is unknown. His wife stated that in 1893 Bernard had received a severe blow on the head from a falling log; that early in 1895 he began to complain of pain in his head, heard vague sounds continually, was sleepless, restless, and had fears of harm and misfortune.

He had a number of outbreaks of excitement in which he destroyed furniture at home. He would explain to his wife that these outbreaks were due to "nervousness," and he would advise her to go out of the house lest he do her some injury. After a time his fears took the form of a fixed delusion that certain fellow workmen at Cramps' shipyard, where he had worked, were "robbing him of a patent on a ship" which he had devised, but which he "was too poor to put through."

This delusion was the prominent feature of his case on admission to the hospital; and it has persisted, though now overshadowed by the notions which we shall proceed to explain.

In August, 1898, it was first observed that Bernard was continually uttering in a mechanical way, certain strange expressions—the one which most frequently recurred sounding like "Boon Knecht." When asked what this meant he replied, "I don't know"; why he said it—"I don't say it." Urged to explain, the patient insisted, "I do not say these words, but the man on my back says them." He added that this man on his back does various things with his, the patient's, body, moving his arms, as well as his lips and other organs of speech. Recently Bernard has gone so far as to set aside a portion of his meals, regularly, for the nourishment of this imaginary host on his back.

For a long time this patient's strange belief was regarded merely as one of the "freaks" of persecutory delusion. It was about two years ago, when at the instance of Dr. Dercum, I was look-

ing up the literature of the subject embraced under the title of this paper, that it dawned upon me that the involuntary or "forced" movements of arm or lips in Bernard's case are instances of what certain French writers have called psychomotor hallucination,—the utterance of words ("Boon Knecht," etc.) being *verbal* psychomotor hallucination,—while Bernard's delusion that these weird influences causing him to speak, etc., are due to a man on his back, is what these French writers call "doubling of the personality."

The explanation given by these writers (Séglas, Ballet) is that as ordinary hallucinations are ascribed to excitation of cortical sensory centers, and are called *psychosensory* hallucinations, so these strange motor phenomena, as in Bernard's case, arise from excitation of cortical motor centers, wherefore they may be called psychomotor hallucinations. The angular gyrus being irritated, the patient sees visions; the hinder part of the first temporal convolution, he "hears voices"; the foot of the third frontal convolution, he *feels words spoken silently*, in his head,—or in other parts of his body,—or he may even feel his organs of speech moved, and hear words uttered by his own lips, to the patient's surprise, since he has not consciously conceived or willed these utterances. The silent "interior spoken word" and the unconsciously uttered word arise by the same mechanism; both are psychomotor hallucinations.

Ordinary (sensory) hallucinations are promptly "exteriorized,"—the voices *heard* are ascribed to outside agencies, etc.,—but the psychomotor hallucination impresses the patient as being due to a mysterious agency within himself; and so in time he forms the conception of a new, strange being inhabiting his body or in intimate association with his body. This is the "double personality" of the French, and is exemplified in our patient with "the man on his back."

The term "double personality" is unfortunate, since it has been employed as a synonym for "double consciousness" in the sense of alternating consciousness. We might suggest that some such term as "accessory personality" would be expressive of the condition which we are now considering.

History of the subject.—Baillarger (1845) from a study of dreams, divided hallucinations into two groups, (1) those without

sound, which he called "psychic"; (2) those with sound—ordinary "voices" of the insane—which he called psychosensorial hallucinations.

Kahlbaum (1866) in classifying hallucinations recognized one kind which he called "abstract" or apperception-hallucination, which is apparently identical with Baillarger's psychic hallucination; and Hagen (1868) had a similar conception in his "pseudo-hallucination."

Tamburini (1881) was the first to apply the modern doctrine of cortical localization to the explanation of hallucinations. In a lecture delivered at the Reggio Asylum, before the class in psychiatry of the University of Modena, he declared that "hallucinations result from an irritative state of the sensory centers of the cortex." Tamburini cited various clinical observations in support of his theory, among them a case of Gowers' in which visual hallucinations in the field of a blind eye were apparently explained, as was the blindness, by the finding of a lesion in the cortical center of vision.

It may be useful in this connection to interpolate a few remarks on what may be called the mechanical theory of hallucinations. It is not new.

Bright, in the *Guy's Hospital Reports* for 1837, mentions a case in which hallucinations of sight followed two apoplectic strokes, and at autopsy a lesion of one corpus geniculatum was found.

Passing by various other instances, we may mention de Schweinitz's case (1891) of left lateral hemianopsia with hallucinations in the dark half-fields. Dercum performed the autopsy in this case, and found gummatous infiltration of the right optic tract.

Spiller has had under his observation for about a year a case of fracture of the skull over the left temporal lobe, in which sensory aphasia and auditory hallucinations are the joint results of injury to the auditory center.

Dr. Spiller has called my attention to a case reported by Sèrieux and Mignot in which cortical deafness, paralexia and hallucinations of hearing were all ascribed to hydatid cysts found in the brain at autopsy.

Regis, in 1881, laid stress upon the significance of unilateral

hallucinations, as arguing a unilateral and mechanical origin of them; and he cited numerous instances in which demonstrable lesions of eye, ear, etc., had set up hallucinations. Regis insisted, however, that the intervention of the intelligence is necessary to give form and character to the hallucinations, for we know that they are related closely to the patient's thoughts.

Séglas (1888) in one of his lectures, exhibited a woman who, beside ordinary hallucinations of hearing, recognized an "interior epigastric voice" which said vile things but without sound. Séglas also mentioned a patient who felt his lips and tongue compelled to move in speech, sometimes audibly; and another patient who not only spoke, but wrote, words which came from the stomach. He stated that Griesinger long ago referred to the case of a woman who uttered thoughts that she had no intention of saying, and in a voice different from her ordinary tone; and that Baillarger spoke of a patient who moved her lips a little in time with verbal hallucinations.

Séglas concluded that these phenomena belong to Baillarger's psychic hallucinations; that they may be referred to the motor cortex; and that, in distinction from ordinary hallucinations, the proper name for them is psychomoter hallucination.

In 1891 Ballet took up the subject of psychomoter hallucinations in a lecture at Saint-Antoine. He exhibited a Swiss stone-cutter who in 1873 had begun to hear voices talking about him, also to hear "interiorly by thought communication," feeling his own thoughts controlled. In the course of six months the patient had conceived the idea that an individual, whom he named Lenoir, was the source of these sensations. In writing, the patient felt his hand deviated by Lenoir; and he constantly communicated with Lenoir, not by voice but, as the patient expressed it, he "felt Lenoir speak."

Ballet identified these phenomena in his patient with the psychic hallucinations of Baillarger and the psychomotor hallucinations of Séglas.

Séglas in 1895 announced his more mature conclusions upon this subject; he had come to believe that the persecutory insane who have pyschomotor hallucinations form a distinct type of paranoia; and that it is only in this "psychomotor variety" of paranoia that double personality arises through the patient's efforts to account for his strange experiences.

Séglas in this paper adopts the theory of Cramer and of Klinke regarding the rôle of the muscular sense in motor hallucinations. These writers had taught that excitation of the centers in which muscular memories are stored causes the inaudible variety of motor hallucinations; while a transference of such muscle-sense hallucinations to the motor centers causes the actual utterance of words, or the movement of other parts. But Séglas still adhered to his original view that the motor cortex is their primary source. The muscular sense centers take cognizance of the involuntary motions excited; and as the muscular sense is an important element of the general physical consciousness (the "cœnesthesia"), the excitation of these centers goes far toward establishing the new personality. As Dercum puts it, the new personality arises by a "hallucination of the cœnesthesia."

Conclusions.—The writer's own view of these matters is, that we may accept the theory of psychomotor hallucination by reason of its plausibility; that psychomotor hallucinations are not so rare as we have supposed; that double personality, however, is a very rare sequence of them, and when it is present it is an accidental conception born of ordinary processes of reasoning over strange sensations.

In the case of J. O'N., an intelligent paranoiac committed to the Norristown Hospital by the writer a year ago, both verbalmotor and common-motor hallucinations were present in abundance; but the patient ascribed them to outside agencies. I believe that psychomotor hallucinations are often thus exteriorized. Séglas suggests that the medieval "possession by a demon" (demonomania) belongs partly in the category of these cases, and this seems probable; but if accessory personality arose by an unconscious physiologic process involving the muscular sense, it would be as common now as was the "internal demonopathia" of the old writers; its prevalence would hardly vary at different epochs. It seems more likely that the idea of possession by a demon, being considered rational in the Middle Ages, was resorted to by patients to explain motor, and other sensations which to-day are ascribed by our patients to outside agencies such as hypnotism, electricity, etc.

Nevertheless Séglas' and Ballet's efforts to apply the teachings of modern cerebral physiology to the elucidation of psychiatric problems must be commended by every psychiater; and their ingenious analysis of these cases of psychomotor hallucination with double personality, constitutes one of the fairy tales of science.

Society Proceedings.

NEW YORK NEUROLOGICAL SOCIETY.

January 6, 1903.

The President, Dr. Pearce Bailey, in the chair.

A Marked Case of Exophthalmic Goiter .- Dr. J. Arthur Booth presented a married woman, twenty-four years of age, exhibiting exophthal-mic goiter to a marked degree. The symptoms had appeared four years ago, the right eye being first affected. She presented the rapid pulse and nervous symptoms characteristic of this disease. Dr. Booth purposed having the sympathetic exsected on each side, and would report upon the case later.

Dr. M. Allen Starr said that the tension of the patient's pulse was very high, and the pulse itself was small. This interested him, because in the majority of cases he had seen there had been a decided diminution of arterial tension. This had suggested to him the propriety of using thyroid in cases of high arterial tension, especially in arteriosclerosis and allied conditions. Of late, he had tried this, and had been pleased with the results.

Dr. William M. Leszynsky said that in a recent journal article the statement had been made that the goiter would be practically obliterated for the time being if the patient, while lying down, made an effort to draw the head forward. The pressure of the sternomastoid and other muscles seemed to cause a complete obliteration of the goiter. He had

tried this experiment in two cases, with the results stated.

Dr. Booth said that at one time he had been of the opinion that many of these cases presented a high tension pulse, and many of them seemed to be helped by aconite, yet this condition did not seem to prevail in the majority of cases. He had not tried the experiment spoken of by Dr. Leszynsky. He had seen four operations for excision of the sympathetic done, and in two of them the effect on the goiter and on the pulse was prompt and very marked.

Dr. W. B. Noyes said that this operation was certainly a very dangerous one. He had recently had a patient operated upon in this way at St. Luke's Hospital. The operation was rather prolonged, and the patient died on the table without the usual signs of shock.

Dr. Booth said he had been present at that operation, and the case had

impressed him as being a very bad one for this operation.

A Peculiar Affection of the Terminal Phalanges of the Hands.—
This case was presented by Dr. B. Onuf. The affection first began about eleven years ago, some thickening of the terminal phalanx of the middle finger of one hand being first noticed. The corresponding finger of the other hand was next affected, and gradually the disease involved the other phalanges. Subsequently the nails presented transverse ridges, and became very brittle. At the present time, there was very marked thickening of the terminal phalanx of the thumb, and all of the terminal phalanges were in a state of semi-flexion, and showed moderate thickening. There was no specific history, and the examination of the lungs was negative. There was nothing pointing to syringomyelia. Several radiographs of the case were presented. These showed that there was almost complete absorption of the entire terminal phalanx of the thumb and of the middle and index

fingers. A radiograph of the foot showed similar changes, though less marked. The disease appeared to Dr. Onuf to be a degenerative one. Radiographs of five phthisical patients having clubbed fingers had been studied by him, but they showed nothing like the same changes as the case just presented.

Dr. Starr said that about seven years ago he had taken photographs of a woman at his clinic who presented a similar condition. The case was not understood at the time, and the photographs were taken because

it was considered a curiosity.

Spastic Paraplegia.-Dr. George A. Lawrence presented specimens from a case of spastic paraplegia that he had under observation since November 9, 1895. The patient gave a history of scarlet fever and of dorsal Pott's disease in early childhood. He was able to attend to business until the summer of 1895, when he fell downstairs and became unconscious. This was followed by severe epileptiform seizures. Examination showed no paresthesia or anesthesia, but there were marked ankle-clonus and fibrillary twitchings of the muscles in the legs, with jerking of the limbs at The man received iodide of potassium in doses as high as 200 grains, three times a day, and also strychnine sulphate in doses varying from 1-100 to 1-50 of a grain. He improved greatly under this treatment, and by the fall of 1896 was going to business. In the following March there was another exacerbation. In September, 1898, he was able to return to business. On March 15, 1899, there was considerable pain in the chest and a drawing up of the limbs was still more marked. In October of that year there were marked fibrillary twitchings of the muscles of the legs and thighs. In December, 1900, there was another exacerbation. On October 2, 1902, the upper extremities were becoming involved, and the patient was growing emotional. On December 1 the heart action and breathing were rapid, and he was exceedingly nervous. On December 26, 1902, death occurred. A post-mortem examination of the brain and spinal cord was alone permitted. This was made by Dr. Strong and Dr. Lawrence the following morning. The spinal canal was found to have been encroached upon at the site of the old kyphosis, and there was much thickening of the anterior surface of the dura mater. The anatomical diagnosis was spastic paraplegia due to a chronic myelitis. The microdiagnosis was spastic paraplegia due to a chronic myelitis. scopical examination had not yet been made.

Address of the Retiring President.—Dr. Joseph Collins, in retiring from the chair, reviewed the scientific work of the society during the

two years he had been its president.

Inaugural Address of the President.—Dr. Pearce Bailey selected as the theme for his address, "Fracture at the Base of the Skull." He said that from the uniformity in localizing signs the conclusion was that the brain lesion accompanying this fracture must also be quite constant. Neurological examinations were often made with difficulty, because the patient was comatose. The cranial nerve injuries were usually multiple and came on immediately, or within a few hours. When appearing still later they were difficult of explanation. Paralysis of the olfactory nerve was sometimes the only focal symptom, but it was usually absent altogether. Blindness and amblyopia in fractures of the base were usually due to fracture extending into the optic canal. It was probable that amblyopia might also be caused by hemorrhages at the base of the skull, which push their way into the optic canal and compress the nerve. Visual disturbances following fractures were always alarming symptoms. Traumatic affections of the optic nerve were frequently accompanied by oculomotor palsies. The frequency with which the third, sixth and fourth nerves were involved was in the order named. The sixth nerve and the seventh were often injured, and this was commonly associated with deafness. It was rare for oculomotor palsies to persist longer than a few months. In most of the cases of traumatic ptosis that he had seen

there had usually been sufficient weakness of the affected eyelid to enable one to determine which lid had been involved. Generally the dilated pupil corresponded with the side having the greater brain injury. Of five cases presenting equally dilated pupils only one recovered. The five cases presenting equally dilated pupils only one recovered. The facial was the most frequently involved single nerve. Paralysis of the extremities showed itself more commonly as a weakness or as a hemiplegia. Paraplegia proved almost invariably fatal. The knee-jerks were frequently diminished or lost at first, but later returned, and might even become over-active. Convulsions were very rare in fractures at the base. From the initial profound coma a large number of persons who die never emerge, but profound and persistent coma was rare in cases which recover. The most characteristic mental state in these cases was semicoma. A fatal result was to be looked for in more than one-half of the cases of fracture at the base. A collection of 494 cases showed a mortality of 57 per cent. In probably 95 per cent of the fatal cases death occurred within five days of the receipt of the injury. Age did not seem to be an important feature in prognosis. Alcoholism affected profoundly both the immediate and ultimate prognosis. With regard to the ultimate prognosis, the speaker said that the literature on this subject was meagre. He had been able to obtain the ultimate result in 14 out of his 28 cases. In all of the cases there was a period of at least one year after the injury. In general, it might be said that in the majority of cases the patient would be as well as before the injury at the end of the first year. In a certain small proportion of cases, however, there were certain changes in disposition or mentality. Irritability of temper, quarrelsomeness, headache and diminished resistance to alcohol were noted in some of those suffering from diseases, such as Bright's disease, which affect the arteries. Epilepsy did not seem to be a consequence of fracture at the base of the If brain injury figured in the etiology of insanity, such patients should be found in insane asylums. It was probable that there were 500 cases of fracture at the base occurring annually in New York city, and that in 150 of these cases recovery occurred; hence, if such an injury were a common cause of insanity these persons would be found in the insane hospitals of this vicinity. Dr. A. E. Macdonald had kindly investigated this question for Dr. Bailey at the Manhattan State Hospital, but had been unable to find more than one such patient in a thousand. conclusion seemed to be that fracture at the base was a negligible quantity in the etiology of insanity.

The Daily Rhythm of Epilepsy and its Interpretation.—Dr. L. Pierce Clark read this paper. He said that in 1897 he had collected and tabulated 9,545 eqileptic seizures by hours. The greatest number of seizures occurred at 4 a. m. Since then he had collected cases occurring in both sexes at the Craig Colony, and had tabulated 150,000 epileptic seizures. During the greater part of this study sedative treatment was at a minimum. The great majority of the patients were in bed, in the first group, and slept from 7.30 p. m to 5.30 a. m. There were three fairly marked curves; that of early night, or 9 p. m.; that of early morning, or 4 a. m., and that of noon. Another class studied was among the out-door workers at the colony. The three main curves were much the same as in the other group, and, as in that group, there were fairly marked secondary curves at 9 a. m. and 5 p. m. In another chart, comprising the whole of the 150,000 seizures, the secondary curves were still more apparent. It was found that the seizures were about equally divided between the day and night. Sleep was deepest during the first hour, then became lighter for an indefinite period, and then deepened again and lightened once more about one hour before awakening. In certain cases in which deep and perfect sleep did not come at once various crises occurred. During the deepest sleep of the epileptic he had never been able to elicit the knee reflexes without adopting sufficiently harsh measures to

awaken the person. The bromides diminish the afferent impulses to the cerebral cortex, and are aids to cerebral inhibition. At noon the epileptic became fatigued and was in a condition comparable to light sleep. Moreover, at this time the heaviest meal was taken, and auto-intoxication was at the maximum. Epileptics should not be idle; they should have a simple but not a monotonous occupation. This study showed that the twentyfour hours were roughly divided into eight-hour periods.

Dr. B. Sachs asked for further information regarding rhythm in the individual epileptic; also if one of the reasons the attacks were so apt to occur in the early morning hours, was that the air of the sleeping apartment was especially vitiated at this time. He would also like to know if it were safe for epileptics to engage in occupations which would place

them in danger should a seizure occur.

Dr. M. Allen Starr said that he had noticed that in the individual there was a tendency for the seizure to return at a certain hour. He had just seen a patient who for sixteen years had never had the attack except between six and seven o'clock in the morning, but who for the first time yesterday had had an attack in the afternoon. This fact seemed to him of some importance in the treatment. Attacks occurring in the early morning hours seemed to point to a weakened circulation in the brain, and hence in such cases he was disposed to combine such remedies as digitalis and strophanthus with the bromides. In some of these cases he thought benefit was derived from awakening the patient early in the morning and giving some hot stimulant.

Dr. W. M. Leszynsky said that in cases of nocturnal epilepsy the rhythm had been considerably changed by the bromide treatment. The attacks would often disappear at night and occur in the daytime, when they had not been so before this treatment was instituted. Mention was made of a man whose attacks had always been at night, while taking bromide at night, and whose attacks first appeared in the daytime when

the bromides were given during the day.

Dr. J. Arthur Booth said that he, too, had observed this change in the

rhythm as a result of treatment.

Dr. I. Abrahamson asked if Dr. Clark had made any investigations

on the metabolism and blood pressure at the time of maximum seizures.

Dr. Smith Ely Jelliffe said that recent investigations on blood pressure had shown that it was at a minimum in the early morning hours. It had been claimed that there was more or less rhythm in the leucocyte

count at the different periods of the twenty-four hours.

Dr. Clark said that there was no doubt that investigation of the metabolism and blood pressure would show them to go hand in hand with that condition expressed only too indefinitely by the term "auto-intoxication." Alterations in blood pressure, he thought, varied with the depth of sleep. The rhythm of the epileptic seizures were certainly greatly influenced by treatment, as well as by diet, exercise and other He had known many epileptics to carry on the trade of carthings. penter for a long time without meeting with any accident, but the latter was prone to come when they became so accustomed to their work as to relax their guard.

PHILADELPHIA NEUROLOGICAL SOCIETY.

January 27, 1903.

The President, Dr. John K. Mitchell, in the chair.

Some New Reflexes.—Dr. D. J. McCarthy demonstrated a new spino-muscular phenomenon. He had found that tapping over the lower lumbar enlargement of the spinal cord, when the first, second or third lumbar vertebra is reached there is a simultaneous contraction of the semitendinosus and semimembranosus muscles.

He also demonstrated that in the case of muscles having a tendonous origin and insertion a reflex may be elicited by striking at either end.

This was shown in the adductor of the leg and in the sartorius.

Certain reflexes about the ear and jaw were also referred to.

Paradoxical Reaction of the Pupil in Accommodation.—Dr. William
G. Spiller referred to the observations of Vysin of what he had termed perverse reaction of the pupil in accommodation. That observer had seen the phenomenon in two cases and probably no other cases are to be found in the literature. The reaction consists in contraction of the pupil on fixing a far object and in dilatation on fixing a near object. One of the cases reported by Vysin was a traumatic neurosis and the other a case of migraine. In the second case the perverse reaction was present only

during the attack.

Dr. Spiller said he had seen this reaction in three cases. One case was that of a woman with organic disease of the spinal cord. The second case was one of mild hysteria, and in this and the following case the observation was confirmed by Dr. W. C. Posey. The third case was in a perfectly healthy person. Dr. Spiller had found that in at least two of these cases, when the patient with one eye covered looked at the point of the nose with the other eye the pupil dilated, while if both eyes were open there was the ordinary contraction of the pupil in convergence. The paradoxical reaction is not the contraction of the pupil which occurs when the eyeball turns upward to which Dr. McCarthy has called atten-This may be an element in the so-called Piltz-Westphal reaction, which consists in contraction of the pupil in forcible closure of the lids, as when the lids are closed the eyeball turns upward.

Two Cases of Huntington's Chorca with the Pathologic Examination in One Case.—This report was made by Drs. C. W. Burr and D. J. McCarthy. The first patient was seen in 1889. The father had had marked Huntington's chorea and was quite demented. He had four sons. The first died before the age of eighteen years of acute infection. The second son is fifty-two years old and has had Huntington's chorea since 1888, but mental symptoms did not appear until two or three years ago. The third brother developed Huntington's chorea ten years ago and committed suicide. The fourth brother, now forty years of age, is in the early

stages of the same disease.

Another clinical observation made was that during the fall of last year the patient developed symptoms of acute excitation with delusions of grandeur and marked motor weakness. This continued two or three months, and then practically disappeared, and the patient is able to be about with some minor delusions.

The man from whom the specimens were obtained was aged forty-two

years. He had been an inmate of the Insane Department of the Philadelphia Hospital. A sister aged forty-eight years has had chorea for five or six years. Other members of the family had suffered from the same disease. Dr. McCarthy described the pathological changes he had found

in the brain from this case.

Dr. William G. Spiller said that some years ago he had examined the specimens from a typical case of Huntington's chorea in the service of Dr. Dercum, and had found the lesions very slight. He doubted very much whether the lesions found could be considered as the direct cause of the chorea.

Hemiplegia with Sweating on the Palsied Side of the Head and Opposite Shoulder.—This case was exhibited by Dr. Wilfred W. Hawke. The patient was a white male aged fifty-two years. He had had a stroke affecting the right side in 1885, and later had a second stroke affecting the left side. The sweating involved the right side of the face and the left shoulder.

A Case of Multiple Fibromata Confined to the Internal Plantar Nerve. -This paper was read by Drs. Wm. J. Taylor and William G. Spiller. (See

page 204.)

The Histopathological Changes in the Cerebral Cortex of Epileptics and

their Interpretation, with Demonstration of the Lesion.—This paper was read by Drs. L. Pierce Clark and T. P. Prout.

Dr. William G. Spiller said that he had understood from the paper that the changes found were in the granular layer and not in the pyramidal cells or in the cells of Betz. From Prout's remarks he gathered that the action of the bromides was supposed to be on the the sensory portion of the reflex arc, and that therefore the cells of the granular layer, according to Dr. Prout, might be regarded as sensory.

He asked whether the changes found were more distinct in any one portion of the cortex; for instance, in psychical epilepsy were the cells of the frontal lobes more markedly affected; or in epilepsy with a visual aura were the cells of the visual cortex more altered? He called attention to the fact that the bromides had been found to produce changes in the nerve cells of the cortex, but he was not aware that these changes were

especially marked in the granular layer.

Dr. William Pickett referred to the statement made, that the gravity of epilepsy should be measured by the mental symptoms. Trousseau has been credited with originating the teaching that the mental symptoms are more prominent in minor epilepsy than in the major form. Esquirol also pointed out that epileptic insanity progresses more rapidly in cases with the minor attacks than it does where major attacks occur early. Pickett had himself seen a number of cases of epileptic insanity associated with minor attacks.

Dr. T. P. Prout said with regard to the distribution of the lesions in epilepsy, that his studies had shown that the lesions were not limited to any one portion of the cortex but were general in their distribution. The special involvement of certain areas may in the future be proven,

but nevertheless the whole cortex is involved.

With regard to the second, or granular layer, while he hesitated to ascribe distinct sensory functions to this layer, yet he felt that he was justified in considering that the cells of the granular layer have a sensory character in the main. In the experiments made by Prus some three years ago, this experimenter found that after penciling the surface of the motor cortex with cocaine he was no longer able to produce epileptic explosions by cortical irritation with the electric current. He was still able, however, to get a motor response in the corresponding muscles in the extremities. One of his conclusions was that epilepsy is essentially a sensory phenomenon.

Dr. L. Pierce Clark said it was unfortunate in many respects, especially as to accuracy in measuring the severity of the epilepsy, that the character of muscular movements in the fit was made the basis of classification. Many types of seizures in which little or no appreciable convulsions occur are accompanied by psychosensory changes of the most regrettable sort. Indeed Esquirol and Delasiauve had long ago declared the so-called minor attacks most disastrous to mental integrity. Nervous discharges in the re-represented frontal brain centers can be attended and followed by mental changes only of the tissues undergoing degradation, which are impairment in judgment, self-control and memory. To illustrate the modern trend of emphasizing the sensory and psychosensory changes in epilepsy, at the Craig Colony it had been a matter of custom for some time to base the severity of prognosis of the individual case upon the mental changes present, rather than upon the type of convulsive movements.

CHICAGO NEUROLOGICAL SOCIETY.

January 22, 1903.

The Vice-President, Dr. H. H. Donaldson, in the chair.

Structure of Neuroglia.—Dr. G. Carl Huber, of the University of Michigan, reported observations of his, extending over a series of years, embracing a study of neuroglia tissue of different classes of vertebrates, made especially with the Benda's sulpha-lizarate toluidin blue method. The research was undertaken with a view of harmonizing the various views expressed concerning the structure of neuroglia tissue and of obtaining data which must of necessity be at hand in order that experimental work involving structural changes in the neuroglia tissue might be undertaken. The report embraced observations made on the neuroglia tissue of man, dog, cat and rabbit among the mammals; dove, tortoise and frog, in all of which the neuroglia tissue of the white matter of the spinal cord was especially considered, since it was found that the relation of the structural elements of this tissue might here be more clearly made out, and its relation to other structures more exactly defined. The results obtained were controlled by observations on the gray matter of the spinal cord and brain.

The following general conclusions were reached: The neuroglia tissue of all vertebrates consists of neuroglia cells and neuroglia fibers. The cellular elements vary greatly in size and shape, depending in the main on the spaces which they occupy. In the majority of the neuroglia cells a granular cytoplasm can be clearly made out. This varies greatly in amount, at times forming only a narrow zone around the nucleus; again present in much larger quantity and presenting very distinct protoplasmic branches. In certain cells, which are designated as "free nuclei," no distinct cytoplasmic covering can be seen. The nuclei of neuroglia cells vary in size, shape and structure. The majority of them may be spoken of as vesicular nuclei with chromatin in the form of a number of relatively large granules, variously disposed. Other nuclei, usually the smaller and smallest seen, present the appearance of compact masses of chromatin, taking the stain relatively deeply. Transition forms between the two varieties of nuclei specially mentioned may readily be made out. The neuroglia fibers show very definite relation to the neuroglia cells, being imbedded in the per-ipheral layer of their protoplasm. With the method used, whenever the preparation is properly differentiated, the neuroglia fibers could be traced through the protoplasm of neuroglia cells without interruption. In imperfectly differentiated preparations, they often appeared as processes. The small, deeply-stained "free nuclei" and the free nuclei showing a vesicular structure, show no definite relation to neuroglia fibers, and are looked upon as undifferentiated and undeveloped neuroglia cells.

Microscopic preparations substantiating the statements made were

demonstrated.

The Mesoblastic Origin of the Neuroglia Tissue.—Dr. Shinkishi Hatai, from the Neurological Laboratory of the University of Chicago, reported upon the origin of this tissue. He said: On examining the cross sections of the central nervous system of the white rat and mouse, two kinds of nuclei, differently characterized, are easily recognized. One kind coincides in structure with that found in the nerve cells, while the other

resembles very much in size, shape and staining character, and in an internal structure, the nuclei found in the walls of the capillaries. These nuclei, so called, are always surrounded by a small amount of cytoplasm. These facts led the writer to a systematic study of these structures in order to determine their origin within the central nervous system.

For the investigation new-born white rats and mice were used. The tissues were fixed in Carnoy's mixture, and the paraffin sections were made

and stained with toluidin blue and erythrosin.

One group of the nuclei, which resembles in structure as well as in shape those of the nerve cells, can be identified without difficulty as derived from the ectoblast. For convenience, Dr. Hatai called these nuclei Type I. The identification of the other group of the nuclei, or Type II, is, however, difficult, since these nuclei have no similarity to the nuclei of the ectodermal derivatives. On examining the capillary wall, he noticed very frequently a nucleus projecting outwards, and in some cases these nuclei were isolated from the capillary wall but lay close to it. Between these two appearances various intermediate stages could be easily found. In some cases a tip of the nucleus is still attached to the capillary wall while the rest of it has become separated. This appearance shows very plainly the migration of the nucleus from the capillary wall into the surrounding tissue. There is no danger of confusing these nuclei with those of the leucocytes which escape from the capillary wall and exhibit ameboid movements, since they differ from them both in structure and size: the former being very must larger than the latter. As soon as the nuclei are separated from the capillary wall they migrate away from the capillary.

The following observation is in favor of the above conclusion. A large number of the mitotic figures in various phases are often visible in the nuclei of the capillary wall. In such a locality where the mitoses are abundant the nuclei are so closely placed that in some cases the one nucleus overlaps the others, the outermost nucleus projecting outwardly, thus show-

ing the first step of the migration.

From the above Dr. Hatai thinks there is no doubt that the nuclei which he has called Type II have been derived from the capillary wall and migrated away from it. The identification of these nuclei which have migrated from the capillary wall with neuroglia nuclei is difficult. Since it has been shown that a small amount of connective tissue is present in the central nervous system in both young and old animals, this connective tissue might have been formed by the nuclei described, but there is no evidence to support the view that this could occur. The large number of nuclei which have migrated from the capillary walls suggests at once that some of the neuroglia tissue is supplied by these nuclei. This idea is favored by the fact that similar neuroglia nuclei to those migrated from the capillary wall or mesodermal in type, exist in the adult animal.

the capillary wall or mesodermal in type, exist in the adult animal.

According to Kühne and Chittenden, the neuroglia fiber is produced by the chemical transformation of cytoplasm into neurokeratin. Chavalier further showed that the same chemical substance exists also in the medulary sheath of the peripheral system. The presence of the neurokeratin meshwork in the peripheral nerve has been shown by histologists also. If it is true that the entire medullary sheath in the peripheral system is formed exclusively by the mesoblastic cells, one can assume that there is here a chemical transformation of mesoblastic cytoplasm into structures characteristic of ectodermal cells. This evidence favors Dr. Hatai's hypothesis that the nuclei which have migrated from the capillary wall might be transformed into the neuroglia tissue and give rise to neurokeratin. Since we have no evidence that Weigert and Benda's technic brings out the neuroglia fibers of ectodermal origin only, these methods can hardly touch the point mentioned above. Dr. Hatai therefore concludes at the present moment that the nuclei which migrate from the capillary wall into the

central nervous system are one source of the neuroglia tissue. The reasons

for this conclusion may be summarized as follows:

(1) The great number of these nuclei; (2) neurokeratin may be formed not only by the cytoplasm of the ectodermal cells, but also by the cytoplasm in mesodermal cells; (3) presence of the nuclei of mesodermal type in the central nervous system of the adult animal; (4) ordinary connective tissue nuclei present in the central nervous system are there in much smaller numbers than the nuclei which have migrated from the capillary walls; (5) there is no evidence that the neuroglia fibers stained by the modern neuroglia technic are of ectodermal origin only; (6) since the cytoplasm undergoes very easily morphological and structural alterations while the nucleus is more resistant, it follows that the nuclei are the better indication of the genetic relationship of the cells; (7) Capobianco and Fragnito, who observed the nuclei which migrate from the meninges into the central nervous system and believe these nuclei form a part of the neuroglia tissue, were unable to trace the successive transformations of the former to the latter. This observation of Capobianco was made on the spinal cord of Mus decumanus.

Periscope.

MONATSSCHRIFT FUR PSYCHIATRIE UND NEUROLOGIE

(Bd. 13, 1903, Hft. 1, Jan.)

I. The Origin and Course of the Oculomotor Nerve in the Mid-brain. N. MAJANO.

2. Hysterical Attacks Occurring Late in the Course of Epilepsy. F. S. HERMANN.

3. The Forensic Significance of Normal and Pathological Drunkenness. A. CRAMER.

4. Scopolaminum (Hyoscinum) Hydrobromicum. Bumke.

I. Oculomotor Nuclei.-Majano has made a careful study of the oculomotor nuclei in the brain of a man dying at the age of forty-eight years, who presented during life the following conditions. Between eighteen and twenty years of age he had had paralysis of the left eye with slight ptosis. About eighteen months before death he developed symptoms of psychosis. He had numerous stigmata of degeneration; there was slight paresis of the right external rectus, and the left eye only moved imperfectly inward and upward or downward. The ability to lift the left upper lid was also impaired. The right pupil was narrow, the left greatly dilated. The light reflex was sluggish on the right and lost There seemed to be slight paresis of the facial and hypoglossal on the left. There was also ataxia, Romberg's symptom, diminished kneejerks and delusions of grandeur. The patient rapidly grew worse and At the autopsy the left oculomotor and right abducens were noticeably thin. Majano gives a careful description of the histological changes found in the oculomotor nuclei. (1) Darkschewitch's, Edinger's and Westphal's nuclei were normal on both sides; (2) the anterior median nuclei were very slightly affected, the right side more than the left, although both were doubtful; (3) the dorsal portion of the principal found in the oculomotor nuclei. nucleus was degenerated in its whole extent with the exception of the left side at the level of the oculomotor decussation. The ventral portion was degenerated on both sides in the region of the decussation. accessory nucleus of Bechterew was degenerated on the left, and there was a general reduction of the left principal nucleus; (4) the median nucleus of Bechterew showed changes chiefly in the proximal region on the left side. In the distal portions there was no pronounced difference. (5) Bolliger's nucleus in the neighborhood of the trochlear nucleus was unaffected on either Majano believes that a careful comparison of these lesions with the clinical symptoms indicates that there is a partial decussation of the oculomotor nerve. He explains the mechanism of conjugate movements of the eye by supposing that the impulse passes from the abducens nucleus to the principal nucleus on the same side at the point from which the decussated fibers arise, which pass into the oculomotor nerve of the opposite side. He discusses carefully the opinions of different investigators, and believes that there can be no doubt that if we deny the existence of decussated fibers in the proximinal portions of the oculomotor, the existence of commissural fibers uniting the oculomotor nerve nucleus must be accepted. (The paper is still unfinished.)
2. Hysteria and Epilepsy.—A man, thirty-five years of age, with a

family history of misuse of alcohol, developed epilepsy at the age of fifteen years after an injury. The epileptic attacks were typical. On one occasion, however, he awoke feeling badly, with contractures in all the limbs without pain. These spasms could be overcome by passive movements. There was a motor aphasia without loss of understanding of what was said. Examination of sensation showed entire loss in the lower extremities, with loss of the pain sense in symmetrical parts of the body. The symptoms were dissipated by faradic electricity. Subsequently the patient had a second hysterical attack with somewhat similar symptoms. The second case, a man of thirty-four, with a family history of misuse of alcohol, had had epilepsy since the age of twelve years. This patient developed nervous hysterical phenomena, such as catalepsy, motor aphasia, loss of pain sense and of taste, rhythmic movements of the head, and these attacks lasted throughout the day. Both cases had had epilepsy for a long time; in both the hysterical manifestations were characteristic and differed from the ordinary epileptic attack. It is possible that the previous alcoholic indulgence of these patients predisposed to hysteria.

3. Drunkenness.—Cramer discusses the significance of intoxication, and calls attention to the fact that in the German law it is not an extenuating factor of crime. He speaks of the conditions that give rise to it, either congenital, including the degenerates, and the acquired, which includes chiefly neurasthenics. Intolerance to alcohol may be transient, and therefore even if the patient withstands an experimental indulgence it does not prove that during the criminal act he was in a normal con-He calls attention to various other factors that influence the resistance to alcohol, and then gives the following points for the diagnosis of pathological intoxication. First, the recognition of a more or less pronounced general pathological foundation. Second, the recognition of particularly injurious factors. Third, the pathological manifestations during the period of drunkenness—anxiety, delirium, hallucinations, peculiar motor reactions, the relation of the pupils, terminal sleep, etc., and then reaches the following general conclusions: (1) Intoxication can only be regarded as pathological before the law when it is influenced by certain factors of disease; (2) The physician should only offer expert testimony when these pathological factors are present; (3) Intolerance of alcohol does not indicate that the intoxication is abnormal; (4) In psychopathic individuals habitual drunkenness may cause repeated crimes of the same character: (5) Experimental intoxication gives positive results only when there is habitual intolerance of alcohol, or when peculiar accompanying pathological conditions are produced; (6) The recognition of a disturbance of consciousness is not sufficient to indicate pathological intoxication; the other morbid factors must be recognized; (7) Amnesia or conditions that occur during the attack may be complete or partial; (8) The crimes are usually those of violence; (9) The attack ceases usually with collapse followed usually by terminal sleep; (10) A sluggish pupillary reaction is of importance when present, but its absence does not exclude pathological conditions.

4. Hyoscine Hydrobromate.—Bumke has employed hydrobromate of to oor. Usually it was given at 8 o'clock in the evening; the effects were prompt and satisfactory in all classes of patients, including melancholics. (The paper is still unfinished.)

J. SAILER (Philadelphia).

(Bd. 13, 1903, Hft. 2, February.)

I. Contribution to the Clinical Significance and Pathogenesis of Babins-

ki's Reflex. W. Specht.

2. Contributions to the Comparative Pathological Anatomy of Acute Encephalitis. H. Dexler.

- Disease of the Posterior Roots with Loss of the Patellar Tendon Reflexes in Tumors of the Brain. W. Erbslöh.
 Scopolaminum (Hyoscinum) Hydrobromicum. Bumke.
- 5. The Origin and Course of the Oculomotor Nerve in the Mid-brain. N. MAJANO.
- I. Babinski's Reflex. Specht has made careful clinical and literary studies of the Babinski reflex. Clinically he investigated 430 cases, 17 of which had distinct lesions of the pyramidal tracts; 22, doubtful lesions of the pyramidal tracts; 30 were children in ages from one to fourteen days. There was one case of epileptic coma, and one of hysterical paralysis of the legs. The other cases were normal. In the 17 certain cases the reflex was prompt and characteristic. In a few it was possible to obtain the extension of the great toe by striking the back of the foot. In the 22 doubtful cases it was present five times in four cases of Liten's disease, and in a case of flaccid degenerative paralysis of the right leg. In the left leg there were also slight spastic symptoms, and the reflex was present. In the other 17 cases there were such conditions as hydrocephalus, multiple sclerosis, syringomvelia, cerebral tumor, infantile cerebral diplegia; in all the reflex was present. In the case of cerebral tumor there was exaggeration of the patellar and Achilles tendon reflexes, but microscopical examination of the cord showed that the pyramidal tracts were intact. In the 30 sucklings the reflex was obtained in 28 cases. In the other two cases, both children eighteen days old, it was doubtful. In a case of epileptic coma which was repeatedly observed, the skin and tendon reflexes disappeared, and the Babinski reflex appeared during the acme of the condition; it then disappeared and the other reflexes returned. In a case of hysterical paralysis it was absent, and also in 359 cases in which there was every reason to believe the central nervous system was normal. He therefore concludes that the great-toe phenomenon may be regarded as a trustworthy symptom of degeneration of the pyramidal tracts, or in those cases in which it is present and no organic disease exists, it indicates a functional disturbance of the pyramidal tract. He gives a theoretical explanation of the nature of this reflex, which is based upon the fact that in certain disease conditions of the pyramidal tract the sensory irritation is sufficient merely to produce retraction of the toe without retraction of the leg.

2. Acute Encephalitis.—Dexler describes some cases of encephalitis that occurred in animals, with the clinical symptoms and pathological changes. Bacteria that bear any etiological relation to the condition

apparently were not present. (The paper is still unfinished.)
3. Tumor of Brain and Tendon Reflexes.—Erbslöh reports two cases of brain tumor in which the knee-jerks were absent. The first, a man of forty-eight years, had a tumor in the left temporal sphenoidal lobe, which proved to be an angiosarcoma. The pathological changes were found in the extra and medullary portions of the posterior roots, and some degenerated fibers were also found in the posterior columns. The second case, a man of eighty-seven years, showed the same conditions. admits that he is unable to explain why the posterior roots become degenerated in brain tumor.

4. Hyoscine Hydrobromate.-The effect of hyoscine upon healthy individuals appears to vary. It usually produces fatigue, profound sleepiness, and occasionally some dryness of the throat. More rarely, however, patients have hallucinations. The repeated employment of it apto have no cumulative or other injurious effect upon the patient. He believes that it is the best hypnotic and sedative for excited mental conditions. Symptoms of poisoning only occur when high doses are employed (more than 2 Kilo), or in very rare cases of individual idiosyncrasy. It is not known to produce death, and is without influence upon the course and duration of the psychosis.

5. Oculomotor Nerves,—Majano continues his article upon the origin of the oculomotor nerve in the mid-brain. He has had an opportunity of the octlomotor nerve in the interpretain. The has had an opportunity of examining a number of additional preparations, including a series from a case of tabes who had developed a left-sided ptosis and a paresis of the right rectus. He found that the predorsal tract was impaired in its entire extent on both sides. The principal nuclei were also affected, particularly the dorsal group on both sides. Some of the other nuclei were also involved from a case of microcephalu in which the movements of the eyes and the reactions of the pupils appeared to be normal; also in a case which was not examined clinically, which presented an enlargement of the right optic thalamus and dilatation of the ventricle. For comparative purposese he examined the brain of a Macacus in which bilateral destruction of the occipital and a portion of the parietal lobes had been produced. He gives in detail the histological changes found in these preparations, and draws the following conclusions: First, that the sublongitudinal or dorsal tract arises chiefly from the nucleus of the anterior corpora quadrigemina. Second, that the ventricular portion of Meynert's commissure arises from the dorsomedian nucleus of the dorsal corpora quadrigemina. It appears likely, moreover, that the sublongitudinal tract, after arising from the lateral nucleus of the anterior corpora quadrigemina, passes obliquely downward in the region of Meynert's fibers toward the median line, and lies close to the capsule of the nucleus From this point some of its fibers pass downward and unite with the root fibers of the oculomotor nerve of the same side. The greater part decussate with the fibers of the opposite side, passing obliquely backward and outward and finally uniting with the root fibers of the oculomotor nerve of the opposite side.

J. Sailer (Philadelphia).

BRAIN

(Vol. 25, 1902, No. 3, Autumn.)

I. Degeneration following Lesions of the Retina in Monkeys. J. Her-BERT PARSONS.

2. Note on the Arterial Supply of the Brain in Anthropoid Apes. A. S. F. GRÜNBAUM and Ĉ. Š. SHERRINGTON.

 Experiments on the Conductivity of the Spinal Cord rendered Anemic by Compression of the Aorta. M. LOEWENTHAL.
 Further Observations on a Case of Convulsions (Trunk Fit or Lowest Level Fit). J. HUGHLINGS JACKSON and STANLEY BARNES.
 Hereditary Aphasia: A Family Disease of the Central Nervous System, due possibly to Congenital Symbilis W. G. STOVE and L. L. Devesto. due possibly to Congenital Syphilis. W. G. Stone and J. J. Douglas.

6. Case of External Spinal Pachymeningitis, implicating the Entire Ventral Surface of the Spinal Dura. C. K. MILLS and W. G. SPILLER.
7. On Changes in the Central Nervous System in the Neuritic Disorders of Chronic Alcoholism. S. J. Cole.
8. Case showing (1) Defective Development of the Dura Mater; (2) Old

Meningitis, and (3) Internal Hydrocephalus. HARVEY BAIRD.

9. Pain. JAMES MACKENZIE.

1. Degeneration Following Lesions of Retina in Monkeys.—The anatomical evidence that the ganglion cells of the retina are comparable to those of the posterior spinal root has but recently been established. The centripetal afferent fibers may, therefore, be rendered easily an object of degeneration experiments by the Marchi method. The work of Pick, Falchi and Baquis in destroying circumscribed areas of retina and studying after-lesions are well-known both to neurologists and ophthalmologists. The results of their studies regarding the relationship of the retina to that of the optic nerve and chiasm and tracts have recently been confirmed by Parsons in experimental studies upon degeneration following lesions of the retina in monkeys. He also suggests explanations of the presence of degeneration in the retina and optic nerve of the sound side; namely that the fiber degeneration

is of collaterals from the injured side, inasmuch as the Marchi shows much smaller and more diffuse degeneration dots. This also held true for the few scattered and much smaller spots on the contralateral tract from injury of the distinctly temporal half of the retina. An arrangement of this kind suggests a possible subservance of some of the hitherto unexplained phenomena of binocular vision in a modified type. However tempting the data for explanation of this sort may be, the evidence of some half dozen monkeys is altogether insufficient for conclusions, and similar research should be pursued further, pathologically and experimentally, particularly as the difference between the human and animal eyes is well known. The author ascribes the degeneration in the third and fourth nerves, that have been found in all these experimental investigations, to artefacts such as Marchi himself found in his early experiments. The rather brief but suggestive experimental work of Parsons should be undertaken upon a more thorough and exhaustive scale in the future; it is a field of practical value, which he rightly claims has been too much neglected in the past.

which he rightly claims has been too much neglected in the past.

2. Arterial Supply in Anthropoid Apes.—The authors have investigated six chimpanzees and one orang-outang, the former of the species Troglodytes niger, from which they conclude that, in the first place, in the chimpanzee and orang an arterial circle of Willis of the human type is met with; although, as shown by Bolk's two orang brains and by one of their chimpanzees, it is not met with invariably. In the second place, they show that in collateral supply of the brain by anastomotic arterial provision, there is, just as with the morphology of the arterial circle, considerable range of individual variation. In some chimpanzees the arterial anastomosis is found experimentally to have sufficient freedom for an occlusion of both carotids maintained for eight minutes, to make no obvious alteration in the faradic excitability of the cortex, at least, in its motor region. In other individuals such occlusion is found to rapidly paralyze the cortex, at any rate, in its motor region, when tested by electrical stimulation. This conclusion harmonizes strikingly with the conclusion drawn by L. Hill regarding the efficiency of the circle of Willis in man. Hill states that sudden compression of the common carotid artery in some men produces epileptic spasm, and ligation of this artery has been followed in some by more or less temporary paralysis on the opposite side of the body; in others the effect is nil.

porary paralysis on the opposite side of the body; in others the effect is nil.

3. Experiments on Conductions of the Spinal Cord Rendered Anemic by Compression of the Aorta.—Although definite knowledge of the anatomical integrity of spinal tracts is nearing completion, that of their function leaves much to be desired. The completion of these data however, is necessary for early diagnosis of cord affections in the future. This fact is especially true in the differential diagnosis of all forms of compression paraplegia. The excitability of the gray and white matter of the spinal cord has been the subject of study for a great many years, but the conductivity of the cord to impulses coming from the outside has not been under investigation until Max Loewenthal took up the subject. He has recently given careful study to experimental work of this sort by compressing the thoracic aorta in cats He finds that for an at present unexplained reason "the first effect of arrest of the circulation on the functions of the spinal cord is an increase in the readiness and strength of interneural transmission of nerve energy which lasts about thirty seconds." In other words there exists a hyperexcitability of the interneural segment, and this accounts for the increased conductivity by cortical excitation and not as formerly supposed, by the white fibers of the cord conducting through the anemic area. It is fairly well known that in man, and particularly in animals, motor impulses may pass in a large measure over the so-called extra-pyramidal tracts or Monakow's fasciculus. An impulse traversing this tract after section of the pyramidal fasciculi would, however, necessitate its traveling over sections of gray matter, the conductivity of which would be prevented. The point of interruption must, therefore, be in the gray matter between the terminal

axones of the ganglion cells of the cortex and their union with the ganglion cells. Loewenthal found, on continued impression that no impulse reached the anterior horn, either peripherally or centrally through white substance after two minutes' compression. But the vitality of the nonfunctionating parts could be restored after anemia of fifteen minutes, which appeared to be the index of their vulnerability. The knee-jerks showed an initial increase which was slowly lost in the same manner as the cortical impulse traveling to the arm and legs. The anemic cord though continued more irritable than normally. The practical demonstration of Hughlings-Jackson's spinal fits is extremely interesting. Slow giratory, writhing movements were present, as a sort of a convulsion long after cortical conductivity to these muscles was abolished by the compression. They were often brought about by peripheral stimulations of stroking the parts in the anemia paralysis. The movements were, for the most part, tonic in character. Probably any motor ganglion may serve under fixed conditions as "cramp centers." But as such groups or centers gradually take higher functions, similar in character to that of the cerebral cortex, they seem to approach nearer to the clonic (cortical) character of true epileptic convulsions. Thus the contention of Jackson in regard to the different level fits receives additional substantiation from this excellent study of Loewenthal's.

4. Trunk Fits.—These are some further observations on a case published in Brain, Spring, 1902, in which a certain type of status was present. The convulsions began in the muscles of the trunk, i. e., in the muscles of the two sides of the body, the normal action of which may be and often is bilateral and began in those muscles of the two sides simultaneously. In the first period of the status the convulsion did not affect the extremities in the slightest degree. In the second period the limbs were affected but after the trunk. There was a march of the spasm down the arms. The fits were thought to be lowest level fits (ponto-bulbar) and not those of ordinary

cortical epilepsy.

5. Hereditary Aphasia.—The authors describe a disease that has been observed in eight members of a family; three cases occurring in one generation and five in the generation following. The morbid lesions suggest though far from conclusively the syphilitic origin of the disease. The main features have been; incontinence of urine, attacks of temporary aphasia with loss of power on the right side of the body, gradually increasing opacities in the vitreous humor of the eyes, loss or diminution of the senses by which pain and temperature are appreciated, muscular weakness, epileptiform convulsions, and sudden death preceded by complete unconsciousness. The histories are too detailed for abstracting. The authors have certainly seen a unique type of disease.

6. External Spinal Pachymeningitis.—Mills and Spiller report a rare case of this affection in which the entire ventral surface of the dura from the foramen magnum to the caudal end of the dural sheath, was adherent to the bodies of the vertebræ by fibrous proliferations, and the rest of the

spinal dura was normal.

7. Central Cell Changes in Chronic Alcoholism.—Cole contributes a careful paper to this subject derived from the pathological study of three cases of fatal alcoholic neuritis. His observations suggest: (1) That the peripheral and central lesions express a nervous degeneration of toxic origin, in the production of which no essential part is played by changes in interstitial tissues supporting the nervous structures, or by changes in the blood vessels concerned with their nutrition; (2) The change in the nerve cells are not the mere result of antecedent damage of nerve-fibers, but the changes in the fibers and cells together express a highly selective affection of whole neurones; (3) The peripheral neuritis is simply a local expression of this affection, and is not of purely local and peripheral causation; (4) The lesion of peripheral neurones is only one of many manifes-

tations of the disease, and is accompanied by lesions identical in nature, affecting many groups of neurones situated entirely within the central nervous system; (5) The central changes are not attributable to the peripheral neuritis, and though in some cases the peripheral neurones are mainly affected, in others the morbid process chiefly implicates central neurones; but these two groups of cases do not appear to be sharply divided.

8. Brain Defects.—A short note on a defective development of dura mater, old meningitis and internal hydrocephalus occurring in a male idiot

of 40 years.

9. Pain.—The author defines pain as a disagreeable sensation due to the stimulation of some portion of the cerebrospinal nervous system, and referred to the peripheral distribution in the external body wall of cerebrospinal sensory nerves. Pain in the digestive tract is felt, he believes, across the middle line of the abdomen and in regularly descending areas according as the region affected passes from the stomach to the great intestine. The pain of gastric ulcer is in the epigastrium, the higher the nearer the ulcer to the cardiac end of the stomach. Hyperesthesia and visceral disease he shows to be related, and he further speaks of a viscero-muscle relation whereby visceral disease causes painful muscular sensations, hardness and tenderness of the abdominal muscles in peritonitis being an example. The sensibility of the viscera is an interesting subhead discussed by the author. A thorough reading by the author of Head's researches would have clarified many of his conjectures and hypotheses.

Jelliffe.

MISCELLANY.

THE PATHOLOGICAL ANATOMY OF CHOREA MINOR. M. Reicharet (Deutsches Archiv für klinische Medicin, LXXI, Nos. 5 and 6, p. 504, 1902).

Two cases of chorea minor are described, which after a brief period resulted fatally, and which upon examination showed anatomical changes in the central nervous system, consisting of inflammation, hemorrhages and degeneration of nerve fibers. The inflammation was characterized by perivenous, diffuse, small cell infiltration of varying degrees; but only in one area was this change visible microscopically. While in several places inflammatory and hemorrhagic changes were found, it is emphasized that the ganglion cells were but slightly affected, if at all. The many hemorrhages, some of which were macroscopical in size, were irregularly distributed, although present throughout the brain substance. These hemorrhagic areas were especially confined to those portions of the brain where the inflammatory changes were most marked, from which the author presumes that the hemorrhages were to be attributed to inflammatory changes in The location of the fatty degeneration of nerve fibers showed that this change occurred independent of the inflammation, being absent at the central convolutions, as well as in the greater portion of the internal capsule, being present however in a marked degree in a portion of the optic thalamus, in the posterior portion of the internal capsule, in the transverse fibers of the knee of the internal capsule, as well as in the lateral portion of the pulvinar. In the spinal cord, the principal seats of degeneration were the root fibers, fibers in the anterior and lateral cornua, and here and there a fiber in the posterior columns. The anterior and lateral columns remained exempt from degenerative processes. The bacteriological examination of the brain was entirely negative in one case, and at the least doubtful in the other. Worthy of note, however, was the existence of endocarditis and pericarditis, as well as the presence of staphylococcus aureus in the blood within the heart, in one case, and the presence of streptococci in the deposits on the cardiac valves and the heart muscle, in the other case. The author seems inclined to classify these infectious cases of chorea minor with those cases of encephalitis occasionally occurring in the course of other infectious diseases. He attributes the described changes in the brain as a The diffuse dissemination of the consequence of the influence of toxins.

anatomical changes in both cases does not permit of a conclusion regarding the origin of the choreiform movements. The cortex, as well as that of the central convolutions, was certainly the seat of only slight changes. The question then arises whether the motor disturbances are to be attributed to the degeneration of nerve fibers which was found to some extent in the basal ganglia and their immediate vicinity. But the author calls attention to the fact, that in from seventy to eighty per cent of cases of post hemiplegic chorea it was in the posterior portion of the internal capsule, in the posterior region of the optic thalamus, or the adjoining portion of the lenticular nucleus, that the lesion existed.

DINKELSPIEL (Philadelphia.).

CLINICAL STUDIES AND DEDUCTIONS CONCERNING FAMILY MYOCLONIA AND ALLIED DISEASES. Herman Lundborg.

The author whose name is closely associated with our present knowledge

The author whose name is closely associated with our present knowledge of family myoclonus presents us with a second and more exhaustive monograph of the above title. The author's preface states his study of the conditions dates from 1897. A short historical sketch and a brief résumé of cases by Friedreich, Homen, Unverricht, Sepilli and Bresler are given with the conclusions and the nosological relationship of family myoclonies with the other motor neuroses by different authors. Lundborg gives observations and investigations upon some seventeen cases of family myoclonies from his own clinics, and considers at some length the possible relationship between myoclonia, paralysis agitans, myxedema, Basedow's disease and dementia præcox. He holds that they may develop upon a common defect of the thyroid either structurally or functionally. The monograph is illustrated by photographs and accompanied by genealogic and metabolic tables in original case studies. The author concludes that family myoclonia is a distinct class of the myoclonies, autotoxic in nature, the pathology of which concerns the spinal cord.

L. PIERCE CLARK.

UEBER NEUERE KLINISCHE GESICHTSPUNKTE IN DER LEHRE VON DER ARTERIOSCLEROSE. Grassmann (Münchener med. Wochenschr., 1902, No. 109).

The pathological anatomy of arteriosclerosis consists essentially in a diffuse thickening of the intima with a loss of the elastic structure of the media. Hypertrophy of the left ventricle takes place after somewhat advanced degeneration of the visceral arteries or thoracic aorta. The process however, may be localized in the smallest vessels. Persistent arterial tension and deficient nutrition to organs affected characteristic. Arterial strain may be very early recognized and is highly diagnostic as a premonitory symptom.

Syphilis, acute infections, alcohol, toxic substances, such as tobacco in excess, etc., are of etiological importance. Palpation of vessels, at times, of much service in examination. Persistent frequency of pulse on lying down, after erect position, quite significant if accompanied with accentuated aortic second sound. Arteriosclerosis of coronary arteries leads to angina pectoris. When the vessels of lower extremities affected, frequently have intermittent claudication. Small doses of iodide of sodium recommended, with milk diet. Baths of aqua carbonica stated, oftentimes, to have remarkable efficacy.

J. E. Clark (New York).

On the Permanent Care of the Feeble-Minded. E. F. Pinsent (The

Lancet, Feb. 21, 1903).

In dealing with various plans for the care of feeble-minded persons who naturally fall within the numerous well-defined classes of this condition, the author mentions the following as the last kind of work recently undertaken by the Birmingham After-care Committee. It had been known for some time that there were a large number of idiots, imbeciles, epileptics and feeble-minded persons who had not passed through the regular classes of the institutions, and were not on the ordinary after-care lists of the Committee. With the help of the School Board officials and others, a list of these cases was collected. After a sufficient number had been found, it

seemed advisable to appoint a committee, consisting almost entirely of medical men, who undertook to examine and report on these cases. In this way the Committee hopes to inform the City Council of Birmingham the precise extent to which the evil exists. At any rate, it is intended to classify these cases under various heads, which should of themselves make it possible to do something for these dangerous and unfortunate members of society. The classes under which it is proposed to bring these cases are the following, consisting chiefly of two main divisions, namely, patients of the school age and those over the school age. Class "A," those of the school age, i.e., those under sixteen years of age, are divided into (1) Those suitable for special classes for the feeble-minded. These, of course, have already been dealt with by the School Board appropriately, although the medical committee is finding some few cases which hitherto had escaped notice. (2) Cases which for various reasons could be better dealt with in boarding schools for the feeble-minded. Such cases have already been recognized, by the London School Board, for example, and classified under the following heads:
(a) Mentally defective children who, but for their defect would be committed to industrial or truant schools. (b) Mentally defective children living in very bad homes. (c) Mentally defective children whose regular attendance it is not possible to secure at any school. (d) Mentally defective children so far from any day school that it would be impossible for them to attend. (e) Defective children known as "morally defective." (3) Epileptics. (4) Epileptics who are also feeble-minded. (5) Feeble-minded children who are also crippled, blind, or deaf mutes. (6) Imbeciles and idiots. The class which includes those over the school age embraces the following subdivisions: (1) Mentally deficient, but capable of industrial work under supervision, i. e., cases suitable for a permanent industrial colony. (2) Mentally deficient, incapable of work, i. e., suitable for a permanent colony.

(3) Epileptics who are capable of work in a colony.

(4) Feeble-minded epileptics. (5) Feeble-minded persons who are also crippled, blind, or deaf mutes, and (6) imbeciles and idiots. TELLIFFE.

Three Cases of Involuntary Movements in Locomotor Ataxia. J. V. W. Rhein, M.D. (Journal Am. Med. Assoc., Dec. 27, 1902).

The involuntary movements of locomotor ataxia may be classified as follows: (1) Associated movements common to many forms of nervous disease; (2) sudden twitchings of the trunk and extremities, occurring with or without pain and more frequently at night; (3) twitchings in isolated muscles or parts of muscles; (4) fibrillary twitchings; (5) rhythmical tremor resembling paralysis agitans; (6) passive movements; (7) involuntary movements commonly described as athetoid movements. To this classification the author adds the rare form of choreiform movements. He describes a case with the classical symptoms of tabes, when a year after the shooting pains began, choreiform movements in the arms, legs and body developed. There was atrophy affecting the anterior and posterior calf muscles and anterior thigh muscles, also in the arms to some extent. There was, in addition to these movements which resembled Sydenham's chorea, a slow involuntary clonic spasm of the fingers of both hands when the eyes were closed. In a second case of tabes, with a spontaneous fracture, and Charcot joint, there was great wasting of the thighs and legs, especially the anterior tibial group. In the left leg a clonic contraction of the toes was observed, which was almost constant. Sometimes the movements were slow, sometimes rapid, but always rhythmical. A third case of tabes with far advanced symptoms showed a curious tremor finely rhythmical in character, resembling the tremor of Parkinson's disease. The pill-rolling posture of the fingers was typically illustrated. There was no rigidity or other signs of paralysis agitans. Discussion of these cases suggested the cerebral origin of the tremor or a combined systemic disease of the spinal cord, not truly tabetic W. B. Noyes. or even disseminated sclerosis.

AN INTERESTING CASE OF PARAPLEGIA WITH RECKLINGHAUSEN'S DISEASE.

Maryland Medical Journal, February, 1903.

Patient, female, fifty-one years. No similar condition in family. Always noted certain tumors on her body. Pigment spots also have been observed on skin. Present illness five years' duration. Commenced with stinging pain in ankle, recurring, and gradually extending up leg, involving lower back, then down into other leg. Two years ago similar pains in arms. Commenced to drag one foot. Confined to bed past year, unable to move herself. For some weeks, marked weakness of arms. Jerking of the muscles constant from the first. At times singing in the ears. Dysphasia for past six months, voice now thick and nasal. Catheterization necessary daily. At first no bladder symptoms. Examination reveals great number of tumors, small, from papule to size of cherry, covering body and extremities. Many pigmented areas; also bluish spots. Associated with growths are certain subjective sensory symptoms. The cranial nerves negative; tongue, however, exhibits fibrillary tremors. A condition of muscular atrophy seen in upper extremities. Paralysis of legs, up to and including hip. Patient can move toes of right foot and abduct great toe of left foot. Ankles flaccid. Great atrophy of legs. Deep reflexes of arms retained, those of legs lost. Electrical reactions good except in hand. In the legs only slight response in muscles which are still active. Sensation unimpaired except over tumors. The lesion in this case apparently is extending upward. There is a failure in mental strength.

J. E. Clark (New York).

Contributions to the Tuberculous Diseases of the Pons. Schoeler (Klinische Monatsblätter für Augenheilkunde, XL, No. 2, p. 313,

1902).

The author quotes the histories of three patients, two being adults and one a child, in whom, upon post-mortem examination, tubercles were found on the pons, about the size of pigeons' eggs. In all three cases marked conjugate deviation of the eyes and optic neuritis were found. In one of the patients, who suffered from violent headache, a lumbar puncture was performed; he continued to get worse and died a few days later. According to the author a lumbar puncture should not be performed, if it is assumed that the tumor is deep seated, so as not to cause an increased pressure upon the brain below. After considering the literature on the subject of diseases of the pons, the author states that the characteristic sign of such disease is conjugate deviation of the eyes. Rarely there is limitation of the upward and downward ocular movements. The second characteristic sign is the "Gubler-Millard hemiplegia," the alternating paralysis of the facial nerve and the paralysis of muscles of the extremities or trunk on the opposite side. Ptosis has frequently been found, as well as paralysis of the auditory nerve.

DINKELSPIEL (Philadelphia).

THE SURGICAL IMPORTANCE OF INFLUENZA. I. Perez (Deut. Zeitsch. f.

Chir., November, 1902).

In a very long article of this title the author draws his conclusions from a review of no less than 520 papers, as well as from his own voluminous experiments on the subject. The more important are as follows: Influenza is a remarkable protean disorder which possesses the highest toxic character, and whose specific cause is the bacillus of Pfeiffer. This bacillus lodges, and causes the characteristic pathologic changes so well known, but often so variable, in almost all the organs, but more particularly in those which, because of the nature of the protoplasm, are most liable to inflammatory processes. The influenza toxins take hold particularly on the central and peripheral nervous system, where they cause either a simple catarrhal process or even purulent, never, however, producing a fibrinous change. The polymorphism of this sickness depends on the location of the infection as well as upon the extent of involvement. Pfeiffer's bacillus

enters through the usual paths, viz.: the mucous membrane, the skin, the vascular system, and so on. The course of the sickness depends on the strength of the organism more than upon the path of entry. If the bacilli are introduced in small numbers, they are apt to remain locally. If, however, in great quantities, or if the organism is extremely prostrated at the time of infection, then certain more or less pronounced changes take place, which, in the early stages, present the appearance of a profound toxemia, as a result of which the individual may perish in a short time-from one to three days. On the other hand, however, in the case of a localized inflammation which sometimes appears with great suddenness in several organs at once, there may be present toxic evidences of a subacute nature. In these cases the patient lasts a longer time, from twenty to sixty days, dying finally from marasmus. The influenza bacillus remains for only a short time in the blood stream, being swept by this current into the various organs. It is only on rare occasions that its presence in the blood can be demonstrated. The skin is the most marked region where one expects to find the peculiar changes characteristic of the infection of Pfeiffer's bacillus. They are very varied. In the derma abscess formation is common. In the mouth, the pharynx, the larynx, the trachea and bronchial system the bacillus usually produces a catarrhal inflammation. In the nasal mucous membrane this may be either simple or purulent, and may even progress so far as to form abscesses and hemorrhages. It is in the middle ear, however, that the influenza germ finds its real home. Here it develops and frequently produces empyema of the antrum with the direful sequelæ of meningeal involvement. In the osseous system the bacillus may produce a hypotrophic periostitis as well as suppurative ostitis. In the joints infection of this type usually produces simple serous inflammation, but elsewhere it may become purulent. Even the muscles are not exempt from its inroads, and a suppurative myositis is often met with in the course of influenza infections. In the peripheral nervous system the infection produces degenerative inflammatory changes which may give rise to single or multiple neuralgias or pareses. In the alimentary canal one may frequently find gastro-enteritis, which occasionally proceeds to suppuration, not infrequently producing periappendicular abscesses which too often go on to death from suppurative peritonitis. In the liver a periphepatitis and hyperemia, as well as interstitial hepatitis with necrosis of the liver cells, and possible abscess formation, are to be looked for. In the female generative organs the bacillus of Pfeiffer gives a hemorrhagic endometritis, a salpingitis, a catarrhal vaginitis which may sometimes be purulent. In the ovary alone it appears never to produce any change. In the early months of pregnancy, however, it is prone to produce abortion. An excellent example of symbiosis exists between the staphylococci and Pfeiffer's bacilli, in which the human body is the loser. Any region which has been previously invaded by the first-named germ seems peculiarly suited to harbor the second, and this would appear to be one of the most frequent aids for the entry of the influenza germ. In establishing a diagnosis of influenza infection, the microscopic investigation of the discharge is of the highest worth, and it is characteristic that the bacillus is found almost always within the The serum taken from animals infected with influenza produces a moderate agglutination reaction, but this is not sufficiently constant to be of marked diagnostic value. One important differential diagnosis to be made is whether a given case is pure influenza infection or contaminated with the pneumococcus, this combination being frequent and virulent. There is no such thing as passive immunity for influenza, only a moderate and rapidly vanishing active immunity seeming to be produced. It will be seen that many of these conditions, which should now be recognized as due to Pfeiffer's bacillus, are too often classified under the old and unscientific name "rheumatism." SURGICAL TREATMENT OF HEMORRHAGIC PACHYMENINGITIS. John C. Mun-

ro. (The Chicago Medical Recorder, December, 1902).

The conclusions of the author, in a very interesting and instructive paper presented at the October meeting of the Chicago Medical Society, are (1) Hemorrhagic pachymeningitis is found in the insane and in infants, but for the most part in men not insane after middle life; (2) Alcohol, syphilis, acute and wasting diseases, and trauma apparently bear some causative relation; (3) The symptoms are those of diffuse subdural hemorrhage, coming on slowly, producing mental irritation, spasm and rigidity of the extremities, convulsions, and later, paralysis, the sequence being more or less irregular; (4.) The cranial nerves are not liable to be affected; (5.) The treatment is surgical, and should be instituted as early in the disease as possible. (6.) Without operative relief in cases with pressure symptoms, the prognosis is practically hopeless. Early operation is not series and gives the best shares for resource. symptoms, the prognosis is practically serious and gives the best chance for recovery.

J. E. Clark (New York).

Subdural Interposition of Rubber Tissue Without Removal of the Gasserian Ganglion in Operations for Tic-Douloureux. R. Abbe

(Ann. of Surg., Jan., 1903).

The hemorrhage and the dangers from hemorrhage and shock led the author to reason that mere division of the affected trunk of the nerve within the skull, coupled with the interposition of a bit of rubber tissue between the divided ends would not only obviate the major operation of removing the ganglia, but also effectually prevent the reunion of the cut nerve. The operation which he advocates in grave cases of this disease is that the surgeon should not temporize by any of the external methods of operating, but at once resort to this, which now seems to him the proved and radical cure in its safest form. The external carotid artery may be ligated with advantage in controlling hemorrhage. A vertical incision over the middle of the zygoma carried through the temporal muscle to the bone divides no important nerve or vessels. The muscle is scraped to either side and held by retractors. A small opening is quickly made by mallet and gouge, and this is rapidly and safely enlarged to an inch and a half diameter. No better exposure can be had by any incision than this simple straight one. The dura is then pressed away from the middle fossa until the nerves are exposed. The much complained hemorrhage from venous sinuses on dissecting up the periosteum can be best controlled, and very quickly, by pressing a strip of rubber tissue upon the place with a firm pad of gauze in strips. The clotting of blood under the rubber tissue takes place very quickly, while if plain gauze is put in contact with the bleeding point, the blood being sucked up into it, prevents clotting. The nerve trunks he grasps in separate artery clamps, divides each close to the foramen of exit, and, either by cutting or by rotation of the forceps, separates them from the Gasserian ganglion. The wound is packed for a few minutes with narrow strips of iodoform gauze until dry. A piece of thin guttapercha tissue, stiff enough to be easily handled, is sterilized by rubbing with bichloride solution, and kept in salt solution for a few moments before operating. This is cut $1\frac{1}{2}$ inches long and three-fourths of an inch wide. This is laid carefully over both the foramen rotundum and ovale, where the nerves have been separated and pressed carefully into place by iodoform gauze. In a very few moments the gauze may be drawn away, and the Gasserian ganglion allowed to settle down upon the rubber tissue. A small drainage-tube should be placed in the angle of the wound to insure a perfectly dry healing. It certainly is beyond dispute that there is no need for the removal of the first branch of the fifth pair in any case of grave tic-douloureux unless the origin is to be found in a tumor of the Gasserian ganglion or behind it. In conclusion, he says that he thinks that he has demonstrated (1) that the operations upon the ganglion have been carried

to an unnecessary degree of severity; (2) that resection of one-fourth or one-half inch of the nerves anterior to the ganglion and within the cranium, with the interposition of rubber tissue, can be relied upon for perfect cure, up to six years at least, with probability of permanency as great as by any method; (3) that it is a simple, speedy, and safe method, and thereby fulfils the highest aims of the best surgery.

Jelliffe.

The Changes in the Spinal Cord and Medulla in Pernicious Anemia. Frank Billings (The Chicago Medical Recorder, Jan., 1903). From careful study of the subject the author concludes (1.) That there is a well established relation of diffuse cord degeneration with pernicious anemia; (2) It seems probable that the hemolysis and the cord changes are due to the same toxin; (3.) While the source of the toxin is unknown, the fact that gastro-intestinal disturbance is so common in the disease would lead one to suppose that it is of intestinal origin; (4) The diffuse degenerations of the spinal cord which occur in conditions without pernicious anemia do not appear to differ essentially from those of pernicious anemia; (5) It is possible that a common blood circulating poison exists which may expend its force upon the blood in one individual, upon the nervous apparatus in another, and coincidently upon the blood and spinal cord in others.

J. E. Clark (New York).

HEREDITY OF MENTAL DISEASE IN GENERAL. Dr. J. Wiglesworth, Medical Superintendent of Rainhill Asylum (The Hospital, Feb. 14, 1903). The author deals at some length with important and practical facts col-

lected in a long experience and referring to the question of the hereditary transmission of mental diseases. It used to be taught in the earlier days of biological science that "the respective shares which the sperm-cell (spermatozoon) and the germ-cell (ovum) contributed to the act of fertilization were of a different order, the germ cell furnishing the matter, the sperm-cell supplying the force which animated that matter, and started it upon its career of development." This view can no longer be held in the light of modern research. We now know that the portion of the germ-cell or ovum which takes the main part in the formation of the fetus or offspring is the nucleus. It is to the union of the nucleus of the sperm-cell with that of the germ-cell that the development of the fetus is due, the two nuclei (male and female respectively) contributing equal shares, in the material sense, to the process. The nuclear material which thus constitutes the vehicle of transmission of herditary quali ties to the fetus from both parents, is itself an organized and complex structure, into whose composition there enter probably many millions of molecules of multiform character, and which singly or in groups take part in the development of every portion of the fetus. Prior to fertilization the nucleus of the ovum undergoes a series of changes whereby one-half of the nuclear "chromatic substance" is divided off and extruded. Precisely analogous changes take place with regard to the nucleus of the spermato-zoon with the exception that each half of the "chromatic substance" result-ing from the division continues as a sperm-cell. Although the precise inter-pretation of these "reducing divisions" is still obscure, the net result is obviously to diminish by one-half the chromatic substance contained both in the germ-cell and in the sperm-cell. And it seems clear that the chief object of this process is to prevent indefinite increase in the mass of the nuclear substance, and thus to secure uniformity of mass. But this "reducing division" is not merely a process for keeping the mass of the nuclear substance uniform in size. For prior to the operation of "reducing division" the nuclear structures (chromatic rods) undergo a process of splitting or cleavage by which each chromatic rod is split longitudinally into halves. Weismann, whose monumental work on heredity has done much to illuminate the subject, believes that the object of this primary doubling of the nuclear rods is to increase the possible number of combinations of

the germ plasma, and therefore the number of varieties which result from the union of the parent cells after "reducing division" has been completed. This is clearly a factor of immense importance in phyletic development. Natural selection acts always and everywhere by seizing upon and fixing favorable varieties, and the greater the number of variations it has to work upon, the greater is the chance of a type being developed adapted to any particular environment. There can be no doubt that only a fraction of the countless variations which are being continually produced become permanently fixed, the rest being silently quenched by the operation of this great natural law. Hence the vast importance of obtaining the greatest possible diversity in the minute structure of the germ plasma, so as to furnish an abundant material for natural selection to work upon. The above observations will show that the problem of heredity is one of great complexity.

The problem of heredity is for the alienist one of particular interest and importance, for it is daily demonstrated that mental (cerebral) peculiarities, no less than bodily ones, descend from parent to child, and that the aberrant mental traits of one generation are the logical sequence of the mental abnormalities of preceding generations. The practical questions which may be addressed to psychological medicine on this point are many. For example, what proportion of insane parents owe their insanity to definite hereditary taint? and in how many, on the other hand, can the insanity be said, in the strictest sense, to have been acquired in the course of the individual life? Is one sex more prone to hereditary insanity than the other? Is one parent more potent than the other in transmitting the disease to the offspring, and are the male and female children affected in different numerical proportions, according as their insanity is derived from the father or the mother? Do the different forms of insanity differ from one another in the degree with which they tend to be inherited? Can the result of disease acquired by a parent be transmitted to the offspring so as to appear in the latter in the form of a tendency to insanity? Is there any diathesis (other than insanity) occurring in one parent which, when associated with the insane diathesis in the other parent might tend to neutralize transmission of the latter diathesis to the offspring, and, conversely, is there any diathesis which tends to reinforce the insane diathesis and to add, therefore, to the dangers? With the object of answering some of these questions an inquiry was made into the family history of a series of cases of insanity observed by Dr. Wiglesworth. These statistical inquiries deal with a series of 3,445 patients admitted to Rainhill Asylum during a period of 12 years, 1,693 of the patients being males, and 1,752 females. These were "patients concerning whose family history any details whatever were obtainable," and in whose direct parentage (fathers, mothers, and grandparents) or collaterals (brothers, sisters, uncles and aunts) insanity, if it was met with, was regarded as a hereditary factor. Patients whose cousins only afforded evidence of insanity were not included in the class of hereditary insanity, as it was thought that there was an equal chance of such taint having been introduced by marriage from an entirely different family, and it could not be assumed, without further proof, that such taint belonged to the family of the patient. "Out of the whole series of 3,445 patients a definite hereditary taint of insanity, epilepsy, or a marked degree of eccentricity or peculiarity, either direct or collateral, was found in 965 cases, a percentage on the whole number of 28.01." There can be no doubt that this figure errs, adds Dr. Wiglesworth, on the side of deficiency, as it is difficult to get trustworthy information as to the family history of our patients, especially when they belong to the pauper class. Farguharson, a recent observer, dealing with a large number of patients of a similar class, obtained a percentage of hereditary taint of 30.7. Statistics drawn from institutions which receive private patients—as distinguished from paupers—usually give appreciably higher results. Thus Grainger Stewart found a percentage of 49.6 among the patients admitted into the Crichton Royal Asylum. Reverting to Dr. Wiglesworth's figures, which give an hereditary taint of insanity in 28.1 per cent, or 965 out of 3,445 patients, it is found that the sexes exhibit a difference. Of these 965 patients, 419 were males and 546 females; and a simple calculation of these numbers in relation to the separate totals of male and female patients investigated in the report shows that the percentage of hereditary taint was 24.74 for male patients, and 31.16 for females. This striking difference has an interest which is enhanced by the fact that it harmonizes with the records of previous investigators, almost all of whom have found a higher percentage of hereditary taint among the female patients than amongst the male. Thus Thurnam gives a percentage of 32.82 for the males and 35.48 for the females; Grainger Stewart gives 48.56 for males and 51.05 for females; while Farquharson gives 27.4 per cent for males and 34.16 per cent for females. The conclusion has hence been drawn that the female sex has a greater liability to suffer from hereditary insanity than the male. It has been suggested that the female sex has to pass during life through physiological crises—puberty, pregnancy and the parturition, lactation, and the menopause-which constitute periods of danger, and which are prone to evoke into activity any latent hereditary taint of insanity, whereas in the male sex such danger is over. when the age of sexual maturity (25 years) is attained. It appears, however, that certain forms of insanity, to be mentioned later, are more often acquired in the lifetime of the individual in males than in females, and that when these are excluded the difference between the sexes as regards the hereditary incidence of insanity it not so marked.

How Not to Be Nervous. Hugh T. Patrick (Journal American Medical

Association, February 7, 1903).

For preventing nervousness in the child or removing that already present, nothing is so effective as the toughening of the body and mind. A child with hard muscles, strong lungs and a vigorous digestion, who can bear changes of temperature and endure pain is already a long way from nervousness. More important is the "toughness of the psychic fiber." The child who can support disappointment, who can be "crossed" without a tantrum, and who habitually obeys is building a bulwark against "nerves." Beside premature entrance into society and magnifying the importance of a child in the family, harm is done by allowing the child to experience fear, usually started by suggestions of parents, or nurses. The writer shows that overwork seldom causes nervousness, but the lack of work, misplaced energy, or worry and indecision surely causes it. Overrating one's natural ability and failure to appreciate the limit of intellectual and physical power surely develops nervous conditions sooner or later. W. B. Noyes.

THE DIAGNOSTIC SYMPTOMS OF TUMORS OF THE BRAIN. J. Arthur Booth

(Medical Critic, February, 1903).

Of the general symptoms of brain tumor, headache, vomiting, vertigo, mental dulness and optic neuritis, headache is the most frequent and distressing; but unless associated with other general symptoms it is not of much diagnostic importance. Localized pain with tenderness on pressure suggests that the tumor is superficial. Vomiting without obvious cause at irregular intervals is a common and distressing symptom. Vertigo is common, especially in lesions of the cerebellum or base of the brain. Double optic neuritis is the most important symptom, without which a positive diagnosis is difficult. The group of localizing symptoms is important, especially motor symptoms. Of cases reported by the writer, the first at operation showed a large superficial sarcomatous mass at the upper part of the left anterior central convolution. This had caused double optic neuritis, epileptic attacks, the spasm at first limited to the big toe of the right foot, but later involving the arm and leg of the same side; no loss of consciousness; blurring of vision and later blindness of the left eye. Headache and vomiting were late symptoms.

In the second case an operation yielded a sarcoma in the facial center of the left motor zone. The symptoms had been pain in the head, and recurring spasmodic twitchings of the right cheek and neck, not involving the arm. Speech was wholly abolished at such times. Later the right hand became somewhat affected. Paralysis of the lower facial muscles of the right side was developed; double optic neuritis; increased knee jerk on the right side; pain and tenderness over the motor zone.

In the third case, a mass about the size of a hen's egg was removed from the left frontal lobe. This had caused attacks of general convulsions and unconsciousness; progressive failure of vision, severe headache, chiefly in the temples; poor memory and other mental symptoms; no special paralytic symptoms; double optic neuritis; deficient sense of smell on the left side, a prominent and tender swelling just back of the external angular

process of the frontal bone.

The fourth case at autopsy revealed a large round cell sarcoma, completely filling the right ventricle and extending over into the left. The corpus callosum and fornix anteriorly were invaded. The symptoms had been a persisting frontal headache, morning vomiting, failure of vision and double optic neuritis; equilibrium poor, with a tendency to fall to the left side. Visual illusions due to a varying hemianopia were noted. Later, fainting or epileptic attacks, loss of sense of smell, paralysis of the left external rectus, diminished hearing on the left side; left hemiplegia and blindness. Mental stupidity, coma and death sixteen months from the onset.

In the fifth case, at autopsy a large nodular growth three inches long was found extending into the right lobe of the cerebellum. This extended also into the fourth ventricle, pushing the medulla to the left and pushing on the right crus of the cerebellum. The symptoms had been progressive malaise, headache, recurring vomiting, mental dulness, irritability, stiffness of the neck. Slight paresis of the right external rectus, no reaction of the pupils to light, marked sensitiveness to touch all over the head. Later optic neuritis and well-marked convulsions; dimness of vision. Five months later complete blindness, semi-coma, paralysis of right side of face, partial paraplegia, bulbar symptoms.

W. B. NOYES.

EPILEPSY. Its Psychopathology and Medico-Legal Relations. H. A. Tom-

linson (Journal American Medical Association, Jan. 17, 1903). The more rapid the mental reduction after the establishment of the convulsive habit the greater the psychic perversion and the more frequent those manifestations of mental aberration which belong to the epileptic, the post-convulsive furor and automatism. The study of these maniacal outbursts indicates that they are the response to the impelling suggestions of unreasoning fear, following vivid hallucinations, usually visual but sometimes auditory. Or, in cases where there is much mental reduction, it is the expression of brutal impulse to wanton cruelty in response to the gross irritation of the convulsive seizure. Sometimes these outbreaks, especially in the procursive form, are mere "running amuck" without regard to anything which comes in the way and with no purpose. Epileptic automatism implies a less degree of mental reduction and the persistence of considerable intellectual capacity. The persistence of automatism after the convulsion constitutes what is known as double consciousness. At such times a return to original or concealed traits of character or family traits will occur. The term psychic epilepsy has no real significance because it implies a condition which, in the nature of things, could not exist; that is, that there is a mental instead of a motor convulsion. It is almost certain that this condition is a post-epileptic phenomenon, where the initial attack is petit mal, which is observed by the mental aberration which follows and is manifested by the automatism or maniacal outbreak. Therefore it is the sequence to the explosion and not its equivalent. In determining how far the epileptic may be responsible for his acts we have to consider not his epilepsy but the degree of primary defect in his mental make-up as manifested by his cerebral potentiality and intellectual capacity. An epileptic child is more or less "spoiled" and poorly controlled. When out in the community, not getting the same treatment, morbid self-consciousness, resentment even to paranoia may develop; or outbreaks of excitement, mental depression or delusions.

W. B. NOYES.

THE MINUTE ANATOMY OF ERYTHROMELALGIA. H. Batty Shaw (British

Medical Journal, March 21, 1903.)

Erythromelalgia is the name given to a condition of the extremities in which redness and pain are associated. Dependence produces considerable increase of the dusky red or violaceous tint of the extremity affected. The pain is increased by warm rather than cold weather; there is no loss of sensation, but there may be increased sensitiveness. The affection is asymmetrical; gangrene does not occur; muscular wasting is found, but is caused by disuse and is less severe than in neuritis. A reaction of degeneration in the nerves of the affected parts has not been found. The deep reflexes are not reduced. In examination of amputated fingers in three cases of erythromelalgia the following results were obtained: The digital arteries showed very slight thickening; those of the thumb showed obvious thickening in the internal coat. There was no definite sign of degeneration of any of the nerves, nor was there an apparent deficiency of nerve fibers or any increase of fibrous tissue in the larger nerve trunks or in the digital nerves. No syphilitic history could be obtained or signs of central nervous disease. Of nine other cases reported a reduction of nerve fibers in a portion of nerve excised was found with an increase of fibrous tissue.

W. B. Noyes.

Book Reviews.

LES OBSESSIONS ET LA PSYCHASTHENIE. Fragments des Leçons Cliniques du Mardi sur les Etats Neurasthéniques, les Aboulies, les Sentiments d'Incomplitude, les Agitations et les Angoisses Diffuses, les Algies, les Phobies, les Delires du Contact, les Tics, les Manies Mentales, les Folies du Doute, les Idées Obsédantes, les Impulsions, leur Pathogenie et Leur Traitement. Par le Dr. F. Raymond, et le Dr. Pierre Janet,

Paris, Felix Alcan, 1903.

This is the fourth series of observations from the laboratory of psychology in the nervous clinic at the Salpêtrière. Professor Janet, the distinguished Professor Ribot's favorite pupil in psychology and himself one of the best known of living psychologists, has added a distinctly new element to Professor Raymond's well known work in the nervous department of the old Salpêtrière hospital. The present volume is indeed an informing When an American introduced the word neurasthenia, only about a quarter of a century ago, neither he nor any one else had any idea of the number of symptom-complexes of various kinds that would be described, the basis of which would prove to be a neurasthenic condition. Not all of these often very queer conditions are mentioned in this volume. Yet its five hundred odd pages contain descriptions of the most diverse mental states associated with neuroses differing not only in kind but in degree, through a whole scale of variations.

It used to be said that hysteria was a disease that could simulate almost any other nervous disease. Now we know that under the term major neurosis and therefore in a way justifiably to be called hysterical there are a variety of symptoms almost without end. The affections partake of a combination of mental and physical symptoms that are almost inexhaustible in their individualizing details. Pains and fears and anguishes and phobias with manias for touching and for fearing contact, for avoiding and for repeating, with manias of doubting and of compulsion, are all almost inextricably associated together without any definite modality in a way that

shows the inexhaustible quality of nervously disturbed nature.

After reading Professor Raymond and Janet's book it is easy to understand how the quack and the charlatan and the Christian Scientist find material to work on. There are endless nervous symptoms for which the most effective treatment is suggestion in some form with improvement of the general nutrition. If for no other reason but the recognition of this fact their book deserves to be widely read by the general practitioner as well as the nervous specialist.

J. J. Walsh (New York).

Mews and Motes.

Dr. Merzbacher has been appointed as Assistant Physician to the Psychiatric Clinic in Freiburg, Baden.

Professor von Strumpell has been invited to occupy the position as Director of the Medical Clinic at Breslau.

Dr. L. Bruns of Hanover has been made Professor.

At the last annual meeting of the German Alienists held at Munich, a commission was appointed to collect statistics bearing on all criminal acts perpetrated by the insane. Cases of suicide, homicide, litigation, sequestration of the insane, insane soldiers and their relations to superior officers, political cranks, etc.

THE NINTH INTERNATIONAL anti-alcoholic congress was held at Bremen April 14, 19 last.

PRIZES TAKEN BY NEUROLOGISTS AND ALIENISTS: Prizes of the Academy of Medicine of Paris for 1902 were awarded as follows: Baillarger Prize to M. Pactel and H. Colin, on the Insane in Prisons and the Insane before the Courts; Chas. Boullard Prize to M. P. Calalian on Hypochondria in Insanity and the Neuroses; T. Herpin Prize to M. R. Cestan on Little's Syndrome; Laborie Prize to M. Jaboulay on Surgery of the Nervous Centers.

ACADEMY OF SCIENCE of Paris Prizes were awarded to M. Dejerine for his Diseases of the Nervous System; Mlle. Pompilian and M. G. Hauser, for their Study of Syringomyelia and to M. P. Bonnier for a Study of Orientation and the Sense of Altitude.

Jacopo Finzi of Florence, a rising young alienist, died at the age of twenty-nine of typhoid fever. A notice of his achievements is given in the last number, No 1, of the Giornale di Psichiatria clinica.

AMERICAN NEUROLOGICAL ASSOCIATION.—The program of this Society, holding its next annual meeting at Washington, May 12, 13, 14, is as follows: Tuesday, May 12, presidential address, Dr. J. W. Putnam, of Buffalo. Other papers are: The Sign of the Orbicularis in Peripheral Facial Paralysis, by Dr. George W. Jacoby, of New York; Contribution to the Study of the Achilles Reflex and the Front Tap, by Dr. George L. Walton and Dr. W. E. Paul of Boston; The Reflexes in Long-distance Runners, by Dr. Philip C. Knapp and Dr. J. J. Thomas, of Boston; Report of a Case of Aneurism of the Descending Thoracic Aorta Mistaken for Pott's Disease, with Autopsy, by Dr. Charles W. Burr, of Philadelphia; Polioencephalomyelitis and Allied Conditions, by Dr. Edward W. Taylor, of Boston; A Case of Acute Degeneration of the Spinal Cord with an Ascending Type of Paralysis, by Dr. D. J. McCarthy and Dr. Wm. E. Hughes, of Philadelphia; Two Cases of Multiple Tumors of the Brain and Spinal Cord, and One Case of Primary Sarcoma of the Spinal Cord, by Dr. William G. Spiller and Dr. William F. Hendrickson, of Philadelphia; Three Cases of Spinal Cord Tumor Treated by Operation, by Dr. J. J. Putnam and Dr. J. W. Elliot, of Boston; Two Cases of Brain Tumor, with Operations. Recovery and Ultimate Death, by Dr. C. Eugene Riggs, of St.

Paul; A Cerebellar Tumor; Operation; Recovery, by Dr. Frank R. Fry, of St. Louis; Central Neurofibromatosis: A Contribution to the Study of Tumors of the Medullo-Ponto-Cerebellar Angle, by Dr. Joseph Fraenkel and Dr. James R. Hunt, of New York; A Case of Progressively Developing Hemiplegia, Later Becoming Triplegia, Resulting from Degeneration of the Pyramidal Tracts, by Dr. Charles K. Mills and Dr. William G. Spiller, of Philadelphia; Chronic Progressive Hemiplegia, by Dr. Hugh T. Patrick, of Chicago; A Case of Progressively Developing Left Hemiplegia, Followed by Progressively Developing Right Hemiplegia, with Exhibition of the Brain, by Dr. Graeme M. Hammond, of New York; Flaccid Paralysis Following Cerebrospinal Meningitis, by Dr. William N. Bullard, of Boston; Cases of Alexia, by Dr. Philip Zenner, of Cincinnati; Two Cases of Hysteria Presenting Marked Symptoms of Insanity, by Dr. Theodore Diller, of Pittsburg; The Principles Underlying Practice in Mental Therapeutics and Legal Regulations of Its Practice, by Dr. Richard Dewey, of Wauwatosa; The Neurasthenic Neuralgias, by Dr. Frank K. Hallock, of Cromwell; The Intracranial Complications of Middle-ear Suppuration, by Dr. Wm. M. Leszynsky, of New York; Modern Theories of the Emotions and Their Bearing on Mental Derangements, by Dr. Henry Upson, of Cleveland; Paralysis Agitans Complicated with Delusional Mania, by Dr. John Punton, of Kansas City; Atypical (One-sided) General Paralysis, by Dr. Adolf Meyer, of New York; Report of Two Cases of General Paralysis with Focal Symptoms; Autopsy in Both Showing Hemiatrophy of the Brain, by Dr. A. Hoch, of Waverley; The Facial Followed by Progressively Developing Right Hemiplegia, with Exhibition Cases of General Paralysis with Focal Symptoms; Autopsy in Both Showing Hemiatrophy of the Brain, by Dr. A. Hoch, of Waverley; The Facial Reflexes, by Dr. Charles L. Dana, of New York; The Importance of the Plasma Cell in the Cortical Vessels in Dementia Paralytica, by Dr. Stewart Paton, of Baltimore; A Case of Cerebral Tumor in which Muscular Atrophy and Astereognosis were Prominent Symptoms, by Dr. Morton Prince, of Boston; Bony Sensibility by Dr. Philip C. Knapp of Boston; Intense Double Optic Neuritis Without Assignable Cause, by Dr. Howell T. Pershing, of Denver; Remarks on Astereognosis, by Dr. William N. Bullard, of Boston; The Importance of the Nerve Centers in Pulmonary Consumption, by Dr. Thomas I. Mays, of Philadel-Centers in Pulmonary Consumption, by Dr. Thomas J. Mays, of Philadelphia; The Limits of Non-physical Therapy, by Dr. Smith Baker, of Utica; Demonstration of Certain Points Regarding the Development of the Neurofibrils in the Nerve Cell, by Dr. Stewart Paton, of Baltimore; Cases of Poisoning with Morphine and Atropine, by Dr. Philip Zenner, of Cincin-Poisoning with Morphine and Atropine, by Dr. Philip Zenner, of Cincinnati; Two Cases of Insular Sclerosis, with Demonstration of Specimens, by Dr. J. J. Putnam and Dr. E. W. Taylor, of Boston; A Case of Lower Arm Type of Paralysis Dating from Birth, by Dr. John J. Thomas, of Boston; The Cerebral Origin of the Knee-jerk, by Dr. J. W. Courtney, of Boston; On a Cervical Type of Spinal Syphilis Closely Resembling Syringomyelia, by Dr. B. Sachs, of New York; Paralysis Agitans in Early Life, Complicated by Symptoms Suggestive of Multiple Sclerosis, by Dr. B. Sachs, of New York; The Work of a Large Dispensary Clinic, by Dr. Smith Ely Jelliffe and Dr. L. Pierce Clark, of New York; A Case of Primary Sclerosis of the Posterior Columns, Followed by Disseminated Softening of the Other White Columns, by Dr. Joseph Collins, of New York; Disseminated Myelitis, by Dr. Joseph Collins of New York.

THE

Journal

OF

Nervous and Mental Disease

Original Articles.

PRESIDENTIAL ADDRESS.1

By J. W. Putnam, of Buffalo, N. Y.

Gentlemen—Before proceeding to address you formally, I desire to express my warmest thanks for the very great honor you have conferred upon me in choosing me for your twenty-ninth President. With the honor 1 accept also the responsibilities, and rely upon your help in making this a successful meeting.

The American Medical Congress was founded because the interdependence of the different branches of medicine was reognized by the master minds of the profession. The time had come when specialists needed to broaden their interests and enlarge their views of the field of medicine. Specialism is so engrossing that its devotees are in danger of becoming narrow in their interests and their activities.

Of no class of physicians is this more true than of neurologists. The range of diseases we are called upon to treat is so large and so varied that it would seem impossible for us to become narrow. In the past few years we have been especially active in research along many lines. Our text-books are models of exact and definite descriptions of diseases, of careful observations of symptoms, of detailed records of clinical history, and of the minutiæ of pathological findings.

Though our writers are accurate and complete in their obser-

¹Read at the meeting of the American Neurological Association, May 12, 13 and 14, 1903.

vations there is an evident tendency to specialize in our therapeutics. Our prognoses reveal to some extent the natural tendency of diseases. Our view of the future seems to be limited by our own resources.

It is important that as teachers and authors we bear in mind that the treatment of disease resulting in benefit to the patient is the ultimate goal of our efforts. It is to this end that our hospitals are founded and maintained by the charitable; it is for this purpose that our patients seek us, and for this that students read and study our books.

The chronic cases of paralysis with deformities from various cerebral, spinal and peripheral causes form a large and hitherto hopeless class. For years those afflicted with diplegia, hemiplegia and spastic paraplegia have sought medical aid in vain. In the books on nervous diseases which the physician consulted for guidance he found, until recently, at the best a statement that such a case may be benefited by appropriate mechanical appliances, massage and electricity; he seldom found that definite statement of facts which the orthopedists have accumulated in the last decade.

Tendon transplantation and the principles which govern the operation should find a place in our chapters on treatment. It should be taught to the student from the neurological standpoint as well as from the surgical. The field is a new one. Old methods are giving place to better ones. This is a therapeutic measure which appeals specifically to us, for it is designed to benefit our patients. It is our province to develop this practice; to study, investigate and teach it, to consult with the surgeon on special cases as we do in a case of brain tumor.

We have long ago made common cause with the surgeon in cerebral and spinal operations; let us extend it to the domain of surgery of the neuromuscle machine.

To the surgeon belongs the technic, and this has been ably developed by such operators as Bradford, Gibney, Goldthwaite, Townsend and Whitman of this country; by Robert Jones and Tubby in England; Hoffa, Lange and Vulpius in Germany; Codivilla and Niccoladoni in Italy.

To us belongs the duty of selecting cases for operations and of enlarging its field of usefulness. The after-care of the

patient is as important as the surgical. The operation must be followed by an education, both mental and physical, which we must direct. It is only through coöperation that the best results will be obtained.

Hitherto the relation of neurology to obstetrics has not been sufficiently appreciated nor emphasized. The effect of prolonged labor upon the child is being studied, and requires much more careful investigation in order to determine the effect of cranial injuries upon the brain. The obligation rests with us to sound the note of warning, in season and out of season, that epilepsy is in a large number of cases due to cranial birth lesions. The lesson must be so impressed that it will be a rule with accoucheurs to examine the head for fractures or undue depressions after severe labors. When this practice has become a rule, and the cranial injuries are treated early and carefully, we may see as a result a diminution in epilepsy, in idiocy and cerebral birth palsies.

It has not been my purpose to refer to the most excellent work done in our own lines of investigation, so much as to emphasize the fact that specialists in the other societies are developing principles and accomplishing results which are of vital importance to us, and that we are developing theories and obtaining facts of equal value to them, and that by joining our researches and making a united effort in investigating the causes of diseases and new methods of treatment, we may improve somewhat the helpless condition of those for whom the prognoses have hitherto been unfavorable, and in other instances diminish in some measure the deplorable results which are to be found in our homes for the epileptic, the feeble-minded and the incurable paralytics.

TABES AND MUSCULAR ATROPHY.1

By Joseph Collins, M. D., New York.

PROFESSOR OF NERVOUS AND MENTAL DISEASES IN THE POST-GRADUATE MEDICAL SCHOOL; VISITING PHYSICIAN TO THE CITY HOSPITAL;
CONSULTING NEUROLOGIST TO THE HOSPITAL
FOR RUPTURED AND CRIPPLED.

Some degree of muscular atrophy is not uncommon in tabes, in fact such complication occurs in from 15 to 20 per cent of all the cases. It is responsible for many of the deformities of the feet which occur late in tabes, such as the tabetic clubfoot and sometimes for the total motor incapacity amounting to paralysis. The variety or form of atrophy that I shall consider particularly in this article, however, is not the slighter forms that lead to deformity of the feet and hands. I shall consider rather the muscular atrophy that is occasionally encountered with tabes, which resembles in its distribution and course progressive muscular atrophy of spina; origin. The other forms of progressive muscular atrophy have recently been described by me in an article in the Medical News dealing with the Symptomatology of Tabes. The variety of atrophy of which the cases that I publish herewith are examples has nothing peculiarly characteristic of it in its clinical manifestations, so far as I can make out, save that it overshadows the tabes, which is rarely typical, in its clinical delineation. The atrophy may attack any part of the body, and extend so as to involve all of the extremities, as it did in my first case, or it may confine itself entirely to the upper extremities, as it did in my second case, or it may be localized, as in my third case. Occasionally, amyotrophy in tabes, which is probably not unlike in its causation the form that I am describing, is limited to a smaller area than in the third case, for instance, the half-sided atrophy of the tongue that was described by Charcot as a complication of tabes may be of the same origin, and likewise the atrophy of the soft palate that has been mentioned by Marie and Koch.

When the extensive amyotrophies of tabes were first described by Condoleon, Leyden, Charcot and Pierret, it was generally accepted that they were dependent upon alteration of the anterior

¹Read at the meeting of the American Neurological Association.

horn cells, either parenchymatous decay or diminution in number. Some of the cases reported by these authors, as well as those of Chretien and Thomas, prove that tabetic amvotrophy is in some instances dependent upon cytological changes in the anterior horn cells. On the other hand, during the past fifteen years a very considerable number of cases have been reported in which disease of the anterior cornual cells has not been found. The muscular atrophy in these cases is adequately explained by the lesions of the peripheral nerves that accompany them. So today, we must admit that amyotrophy of a very profound type occurs with tabes, and that it is dependent in some instances upon lesions of the anterior horn cells, in others, the more frequent, upon disease of the peripheral nerves. It is true that in some cases of extensive muscular atrophy in tabes we have, as Dejerine has suggested, a coincidence of tabes with chronic poliomyelitis, just as occasionally we have it with other chronic nervous disease, such as paralysis agitans (Placzek), and multiple sclerosis (E. W. Taylor). I see no reason why a patient with tabes should not develop paralysis agitans, or multiple sclerosis, but of course, there is no relationship between them. Slight alteration of the peripheral nerves is not infrequently found when the lesions of tabes are studied with the microscope² and a theory of the pathogenesis of tabes has been founded in part upon the existence of these lesions. The changes in the peripheral nerves in tabetic amyotrophy are of a different nature from those found in tabes with slight muscular atrophy, and the lesions of the former cannot be looked upon as an intensification of the process in the latter. As a matter of fact, the slight alterations of the peripheral nerves that have been described in some cases of tabes may occur in almost any slowly progressive central nervous disease of protracted duration. In the severer forms, such as Case I in this series, the lesion is a true parenchymatous inflammation or degeneration. Some writers have endeavored to make the changes in the peripheral nerves secondary to functional affection of the anterior horn cells, for instance, Schaffer3 maintains that the anterior horns are functionally damaged consecutive to degeneration of the collaterals of the posterior roots. The cellular affection begins with very delicate structural

²See article on "Morbid Anatomy and Pathogenesis of Tabes," Medical News, April, 1903. Revue Neurologique, 1896, No. 4.

changes which develop slowly. The clinical character of tabetic atrophy is in complete harmony with the cellular changes. The most characteristic feature is its slow progression, the absence of fibrillary twitchings and of reaction of degeneration. The most common location is in the peroneal region. Schaffer records a case in which Argyll-Robertson pupil, loss of the patellar reflexes on the right side, and a tabetic arthropathy of the left hand were the symptoms. The peroneal muscles were paralyzed on the left side. Histological examination showed that the motor cells of the lumbar cord were very much diseased, while those of the cervical cord were normal. These changes were made out by the use of Nissl's method. The author looks upon the peripheral nerve lesions as secondary or dependent upon the central. Such an explanation may suffice for the minor tabetic amyotrophies, but it is entirely inadequate for the varieties considered here.

The history of the first patient whose case I shall describe in detail is as follows:

Mr. M. was first seen by me December 28, 1895; he was then forty-seven years of age. His personal history previous to the beginning of his present illness was that he had married when twenty-five years of age and had been a widower since he was forty. He denied having had syphilis, but stated that all his life he had taken the risk of such infection. He admitted having had gonorrhea. In his business, that of a merchant, he had been a fairly hard worker, and during the last four or five years he had been worried because of business reverses. He was temperate in the use of spirits and an abstainer from tobacco. His family history was that his father and mother had died of apoplexy, the former at the age of sixty-five, the latter at the age of seventy-six. They had three children, one of whom died in infancy and the other in late childhood from acute diseases. So far as the patient knows there is no history of nervous disorder in the family. His own marriage had been childless.

Mr. M. enjoyed good health until about his forty-third year, when he suffered from an attack of pleurisy and pneumonia, and although he does not attribute his present trouble to that disease, he says that he has never really been well since he had it. A short time before the pleuro-pneumonia he was thrown from a horse and fell on his back. So far as he knows this fall did not injure him in any way, as he got up and rode on. After the attack of pleuro-pneumonia he suffered a great deal with his throat and had to go frequently to a physician, but I am unable to find just what the nature of the trouble was. Two or three months

after the attack of pneumonia he noticed for the first time that both hands felt somewhat numb, and that there was some loss of strength in the left hand. At first this was not heeded particularly, as the numbness was variable in its intensity. A few months later he noticed that spaces were beginning to form between the bones of the left hand, and after this atrophy of the interossei had become quite marked, weakness and atrophy of the muscles of the right hand developed. He says that when the shrinkage began to show itself in the right hand the left hand got somewhat better, but it is probable that it got better merely by contrast. Later the atrophy extended to the forearms, arms and shoulders. All this time, he says, there was no pain, merely the sensation of numbness mentioned above.

Coincident with the development of the trouble with the hands, and possibly even before it, the patient remarked that it had become impossible for him to urinate in the customary way. At first the stream could be started with great effort after waiting patiently for a considerable time, but soon it became possible only to urinate when at stool, and he soon fell into the habit of urinating twice a day, at which time he would take a copious irrigation of the rectum. He had been constipated for some time before the beginning of his present trouble. He had begun the injections only after the diffculty with urination showed itself, and since the same time he had been wholly impotent, occasionally having a semi-erection in the morning when the bladder was over distended. About this time he noticed a sense of insecurity in walking in the dark, and soon fell into the way of having his room lighted at night so that he would be able to walk about more securely when he had to get up. About eighteen months after the symptoms showed themselves in the hand the right leg became lame so that he couldn't raise the thigh, or cross the right leg over the left without manual assistance, and the leg dragged so that he had to lift the knee very much higher on this side than the other in order to swing the toe free from the ground; in other words, foot drop on this side was an early symptom. All this time there was very little pain. The extremity wasted from the hip to the toes. Six months later a similar condition in the left lower extremity; the lameness was not quite so marked, but the wasting was just as conspicuous. It was particularly striking below the knee. During this time the wasting and paralysis of the upper extremities progressed somewhat, but with nothing like the progress that they did in the lower extremities. The condition of the bowels and bladder remained about the same. There was no incontinency of urine. The patient was able to get about with the aid of two sticks.

The patient had been under treatment by general practitioners and specialists from the first manifestation of his trouble, but treatment had not been of service. He had received electrical baths, hypodermic injections of strychnine, pilocarpine, the animal extracts, electrical treatment and massage. Three months before coming under my observation he began to complain of pain in the lower part of the spine, and of a sensation as if swarms of ants were crawling beneath the skin in the feet and legs. It might here be added that this symptom became very severe and added greatly to the burdens of the patient's life. He thought that the wasting and the lameness had apparently come to something like a standstill, as he seemed to be able to get about nearly as well as he had been any time during the six months previous. He complained of failing sight, of occasional severe attacks of dizziness, of involuntary twitching of the legs and drawing up of the knees. After being in bed a few hours the legs and thighs suddenly and forcibly flex, then extend, then the toes draw up and the feet twist These involuntary movements often occur every fifteen minutes, beginning at about 2 A. M. until he arises. They deprived him enormously of strength.

He does not complain of fibrillary twitching either when he is lying down or when he is quiet. The legs feel unwieldy and the feet very uncertain in their action. The only complaint of the upper extremities is that he cannot use the right hand very well. His business at this time compelled him to use a pen nearly all day, and the hand cramped so severely after a half hour or so that he would have to wait until the muscles got rested. Despite this he thinks that the hands are better now than they were six months ago. The left upper extremity is fairly strong and it does not

give him any trouble.

On examination it is seen that the lower extremities and muscles about the pelvis, lower abdomen and right hand are the seat of marked wasting or atrophy. The remainder of the body seems fairly well nourished. The atrophy is most marked in the right hand, which has lost its normal contour, the thenar and hypothenar eminences being entirely flattened and the interosseous spaces hollowed. He is unable to adduct the fingers after they have been abducted, and to reflex the first phalanx of the thumb on the first metacarpal bone. The terminal phalanx of the thumb tends to remain in a position of forced extension. There is similar wasting, but to a much less degree in the left hand. The relative strength of the two hands is shown by the dynamometric registrations, that of the right hand being 20, that of the left hand 50. Although the upper extremities are thin, there is no real atrophy of any muscle or group of muscles. The direct myotatic irritability of the muscles of the upper extremities is lively, but the contractions produced by the percussion hammer are slow and vermiform. The wasting in the lower extremities is most advanced in the muscles supplied by the sciatic nerves, the right leg is affected

more than the left. When he attempts to stand with the feet together the ankles tend to turn out and the knees to bend, and unless he is very careful he falls. The atrophy has begun to show itself in the shape of a pelvic girdle, i. e., extending around the upper part of the thighs and the lower part of the trunk. He experiences a great deal of difficulty in flexing and extending the thighs, but the adduction and abduction of the thighs is still performed very well. The most difficult movement of the feet for him to make is extension, especially of the right foot, which has assumed the position of foot-drop. On attempting to walk without shoes the right foot wobbles uncontrollably and is very apt to overthrow him. The electrical irritability of the muscles is characteristic of partial reaction of degeneration, i. e., there is less irritability to the faradic current than to the galvanic current; although both of them produce a response, that to the faradic is extremely sluggish and vermiform. The pupils are typical Argyll-Robertson, they are small, almost pin-point and wholly immobile to light and shadow, they contract in accommodation. There is no ataxia of the upper extremities. The sensory reflexes, plantar, cremasteric and abdominal are present and lively, save the lower abdominal, which is rather sluggish. Sensibility of the lower extremities is not acute, but still it was impossible to say that there was any real anesthesia or analgesia at this time. There was tenderness on deep-seated pressure over the sciatic and popliteal

The patient was put under treatment, which consisted of lenient massage, faradism to the muscles, galvanism to the spine, hypodermic injections of strychnine, and otherwise a general tonic plan of treatment. He grew worse gradually and notes of a complete examination made eight months afterward, viz., on the 1st of September, 1896, show that the patient walks laboriously with the aid of two sticks. The portions of the body in which the atrophy has made the most striking progress is in the lower pelvic girdle. The gluteus maximus muscles especially seem to have very nearly disappeared; there is very little power in this portion of the body. The movements of walking, swinging the legs, etc., are accomplished very largely by the aid of other muscles. The atrophy in the pelvic girdle is not quite so conspicuous on the anterior surface as it is on the posterior surface. The legs below the knees are in sharp contrast with the upper part of the thigh, insomuch as the atrophy here is relatively slight. The toes of the right foot are in a more or less constant state of flexor cramp, and he has very little voluntary power to move or wiggle them. Electrical examination of the abductors and extensors of the thighs shows that there is no response to the faradic current, while the anterior and internal crural muscles show a sluggish and vermiform response. The reaction to the galvanic current is diminished. The immediate muscular irritability of the lower extremity is very sluggish, and no tendon response can be made out. The patient complains of paresthesia in the feet and along the outside of the thigh, and there is distinct analgesia over the peroneal nerves. Involuntary drawing up of the legs at night is quite as troublesome as it was.

The bowels and bladder do not act save on direct stimulation. It is necessary to inject large quantities of water into the rectum and colon before an evacuation can be secured. The bladder empties itself in part during defecation, but it is now necessary to use the catheter regularly. The atrophy of the muscles of the hand and right upper extremity has apparently ceased to progress. About this time the patient began to have disagreeable sensations of paresthesia and pain in the lower lumbar and sacral region.

The patient's condition grew gradually, very slowly but steadily worse. When he first came he was able to walk with a stick, a year later he was able barely to get about with two sticks, and needed great assistance in getting in and out of a car or carriage. A year later he could drag himself around upon crutches, and in another year he was in a wheel-chair. A note made April 12, 1898, states that the pain in his back is so severe that he cannot bear the weight of a truss which he has had to wear because of a right inguinal hernia. The left leg is now quite as much involved as the right. The toe-drop and foot-drop are so complete in each extremity that he stumbles and falls over everything. The bones of the lower extremities feel, he says, as if they had been beaten with heavy weights. The muscular twitching in both legs and in the right hand is extremely distressing, the fingers are much weaker, but the atrophy does not seem to have made any progress. it still confines itself to the thenar and hypothenar muscles of the first interesseous space. The formication on the bottom of the feet and the peroneal nerves, particularly the right, is intolerable. Vision has failed very much during the past year; now everything seems to be cloudy and misty. Examination of the optic nerve shows distinct optic atrophy, the pupils are the same as before, the bladder now can be emptied only by catheterization. patient until this time had been of good courage, and faced his increasing infirmities bravely; he now became wofully despondent in the face of physical impotency and financial distress. He lasted about a year longer, during which time there was no particular change in his symptoms, the atrophy did not become more advanced than is indicated above, but he seemed to grow gradually weaker. A few months before his death he had some paroxysms of difficulty in breathing, but they were evidently symptomatic in character. The patient died rather suddenly, the symptoms immediately preceding death being those of pulmonary edema.

The spinal cord, pieces from many of the affected muscles and

sections of the musculospiral, ulnar, sciatic and popliteal nerves were removed and prepared for microscopical examination.* The spinal cord was most profoundly affected in the lumbar region, and the morbid process diminished in intensity and extent upward from this region. Examination of sections taken from the first lumbar segment shows a degeneration of the posterior columns, and to a less extent of the posterior part of the lateral columns and the posterior roots. The bulk of the degeneration is borne by the middle third of the columns of Burdach and by the posterior roots. The lesion, which is a degeneration of the axis cylinders with a comparatively slight increase of glia tissue and very little vascular degeneration, is not, however, confined to that part of the column of Burdach to which the name "bandelettes externes" is given by the French writers. This part of the column is degenerated, but so also, particularly higher up, is the posterior part of the column of Burdach and the column of Lissauer. There is in addition some degeneration of the lateral part of the cord, especially of the posterior part of the cross-pyramidal tracts. process does not seem to have involved all of the pyramidal tracts, nor is the intensity of the degeneration so great here as in the posterior columns. The involvement of this part of the cord is most evident in the upper lumbar region, least evident in the dorsal region, and slight in the cervical region. The uncrossed pyramidal tracts are not affected. There is no degeneration of other white columns of the cord. The anterior gray matter of the spinal cord in the lumbar region shows no abnormality, it seems to have preserved its contour and its normal constitution. The cell bodies of the peripheral motor neurones are of the customary size and shape and number, and accept the Nissl stain in the customary way. There are no vascular changes in the gray matter worthy of note. Many of the cells of the posterior columns are degenerated, atrophied and shrunken. The peripheral part of the posterior grav substance shows a greater amount of degeneration than the central part. There is little or no evidence of disease of the meninges.

Sections from the dorsal region show a different picture from that just described. The degeneration here is confined almost exclusively to the columns of Goll. The picture that is presented is almost identical with that of ascending degeneration in this column produced experimentally by section of posterior roots in the lumbar region. This degeneration of the columns of Goll can be traced upward into the cervical region, diminishing in extent, however, as we go upward, i. e., the degeneration occupies relatively a less area of these columns. In the lower part of the dorsal cord the columns of Burdach show slight degeneration, espe-

^{*} Reference to the mode of preparation is omitted. All the modern methods of staining the nervous tissues were used.

cially in that part of the column which borders on the posterior horn; in other words, the zone of the entering posterior roots. But as I have said, this area of degeneration soon disappears. The other parts of the cord are fairly intact. The lateral columns do not seem to be quite as normal in their appearance as they might be, but it is impossible to say that there is any degeneration of the axis cylinders here. The anterior gray matter is normal in its appearance and constitution, the columns of Clarke are well preserved, and the posterior gray matter presents no detectible change.

The state of the cord in the cervical region needs no extensive description. There is no lesion to be made out save the small area of degeneration in the columns of Goll corresponding to the de-

generation spoken of below.

Examination of the spinal ganglia of the dorsal and lumbar region, stained with hematoxylin and, according to Nissl's method, did not reveal degeneration of the cell constituents of the ganglia, despite the fact that the degeneration of the posterior root fibers in the supra-ganglionary area was very evident. The anterior gray matter of this part of the cord was studied most carefully, especially sections stained by Nissl's method, but no alterations that are admitted to be truly pathological were found. Some of the cells showed a fair degree of chromatolysis, others irregular pigmentation, and here and there slight vacuolation. Dr. B. Onuf, who kindly looked through the specimens, subscribes to the statement that these cells could not be considered to be the

seat of pathological alteration.

Sections of the ulnar, the median, the popliteal and other nerves show them to be the seat of alteration of the nature of parenchymatous and interstitial degeneration. The larger part of the nerve is transformed into fat tissue and fibrous interstitial tissue. Many of the nerve fibers that are not so transformed show partial degeneration. The fibers are swollen, twisted, here and there beset with fat globules. The walls of the blood vessels are thickened, particularly the external and middle coats, and the lumen is somewhat decreased. These thickened blood vessels are in striking contrast with the fat masses into which so much of the nerve has been transformed. The intensity and character of these alterations and changes in the nerve are more satisfactorily conveyed by the accompanying illustrations than by verbal description. In some of the nerves the process was more advanced than in others; for instance, in the ulnar and external popliteal it was most advanced. In the former more than one half of all the fibers are transformed into a homogenous fat mass, while sections from the sciatic nerve show that fibers having a more or less normal appearance predominate numerically, although the degeneration is here very striking. The sensory nerves seem to be involved

only to a very slight degree. Sections from the radial and peroneal nerves show that the diameter of the nerve fibers is variable, and that the interstitial tissue is somewhat increased, but there is little or no alteration in the axis cylinders or in the sheaths of Schwann. The degeneration of the nerves is to be seen distinctly in many of the muscles. For instance, in the lumbricales. Here the irregular aspect and ragged appearance of the nerve fibers are

very apparent, likewise the scarcity of them.

The lumbricales muscles fibers are themselves the seat of parenchymatous and interstitial alteration, but the process is neither so well marked nor so extensive as in the nerve. The muscle spindles are normal. This is well shown by Plate D, which shows two muscle spindles with thickened capsules. Between them a degenerated small nerve bundle cut obliquely is to be seen. Sections from the muscles of the thenar eminence, and from the gluteal muscles show most satisfactorily the change that went on in the muscles. It consists of a degeneration and atrophy of the muscle fibers, an increase of the interfascicular fibrous tissue, and a thickening of the blood vessels, but without proliferating endarteritis or anything suggestive of an obliterating process in the blood vessels. There is a very considerable fatty infiltration of the fibers, more in the sections from the gluteal muscles than from those of the hand.

The case therefore is one of tabes with muscular atrophy of neural origin, the lesions of the peripheral nerves being a degenerative neuritis. The lesions of the muscles are very similar to those of neuropathic atrophy, a parenchymatous decay with accompanying fatty infiltration and slight connective tissue increase. The clinical features of the tabes were not typical, neither were the lesions of the cord. In my study of the profounder forms of tabetic amyotrophies, I have been very much struck by a statement made by Chretien and Thomas4 to the effect that there is a form of tabes that begins with muscular atrophy in which tabes symptoms remain very much in the background. In none of the three cases that I am reporting in this article was the existence of tabes suspected until it was revealed by the physical examination. Strümpell, in commenting upon the cases of the above mentioned writers, remarks that paralyzed legs do not show ataxia. But that has nothing to do with the subject. The point is, that in these cases, such as I report, there are no subjective symptoms of tabes of any moment, and the disease tabes does not comport or display

Revue de Médecine, 1898, p. 886.

itself in the ordinary way. The best proof of this is that tabes is only revealed by the examination. It may be that the atrophy is such a dominant symptom that it obscures the tabetic symptoms. But the atrophy does not always come first in these cases. For instance, in a case somewhat similar to mine reported by Goldscheider,5 the following symptoms developed first: Girdle-feeling, diplopia, right-sided ptosis, numbness in the legs. At the time of examination there were present: Right-sided ptosis and mydriasis, ataxia of the lower extremities with profound muscular atrophy, slight ataxia of the hand, sensory disturbances in the lower extremities, and loss of knee-jerks. In the course of the disease the atrophy became more and more pronounced, and the picture of tabes quite typical. The patient was a woman forty years old who denied syphilis and alcoholism. On microscopical examination there was found in the middle of the cervical region degeneration of Goll's column, and likewise a similar area which extended into the anterior portion of Burdach's column, reaching the lateral border between the middle and posterior third of this. This area was separated from Goll's column and from the posterior horn by an area equally wide of intact white matter. The degeneration increased as the examination was carried lower and lower, so that in the dorsal region nearly all of the posterior columns was involved by the degenerative process. About six cm, above the beginning of the lumbar cord there was a limited degeneration of the lateral columns especially at the periphery. This area was larger in the lumbar region and two cm. below the beginning of the lumbar segments it had the appearance of a wedge driven into the lateral part of the cord. In a number of peripheral and sensory motor nerves there was found intense atrophic degeneration. Other cases of tabetic amyotrophy in which more or less involvement of the lateral part of the cord has been found, are reported by Schultze and Strümpell.

In this JOURNAL of February, 1894, I reported a remarkable case of progressive muscular atrophy with locomotor ataxia, which it may be said in passing has been referred to by some European writers as one of probable syringomyelia. If one is willing to make the diagnosis of the latter disease when the symptoms of tabes and progressive muscular atrophy co-exist, I cannot

⁵Zeitschrift f. klin. Med., Vol. xix.

gainsay him the privilege. I had the case under observation for many years and saw him last three years after the report of the case was published. During this time no features diagnostic of syringomyelia were present.

The patient, a man fifty years old, had been a hard drinker in his early life, and had contracted syphilis when twenty-five years old. When he was thirty-six years old, and at a time when he was drinking freely of alcoholic liquors, he noticed for the first time that the arms and the legs were getting weak, and that he had occasional attacks of pain in the legs. Two years later he lost control of the bladder, and was so weak that he had to go to a hospital. While he was in the hospital his upper extremities became quite powerless, the hands and shoulders began to get smaller, and continued to do so until they reached the condition in which I found them, absolute powerlessness and flaccidity of the upper extremities. Soon after he went into the hospital he suffered from incontinence of feces as well as of urine. After two years in the hospital, he had regained control of the sphincters, and his legs became stronger. It was at this time that he began to complain that he saw double, and of lightning pains in the lower extremities. These pains were so severe that for weeks at a time he could not sleep. Sexual power was lost rapidly, and he had occasional incontinence of urine. From this time he was unable to walk in the dark and had difficulty in descending steps. He says he feared that he would fall as he could not grasp the bannister with the The wasting of the upper extremities, which had been progressing during this time, began first on the right side, and has always been more marked there, although the left is extremely affected. The wasting involved the flexors and extensors equally and no suspicion of the "claw hand" ever developed. The wasting at first was rapid, but after three to four years it progressed very

Examination made in April, 1893, showed: On inspection, the patient when at his ease assumes a posture with the head bent forward so that the chin nearly touches the chest. (Photographs of the patient are to be seen in the original article.) When asked to hold the head erect the chin is tilted upward and the head is inclined a little backward. The former is his habitual posture. The upper extremities hang like flails from the shoulders. They are completely powerless. By swaying the body he is able to start them in a swinging motion. The hands look as if they had been flattened with a rolling pin; the eminences and depressions have entirely disappeared. The forearms and arms have lost almost completely their muscular tissue, some fat still remains. The head of the humerus on the right side has dropped from its socket so that a depression the width of a finger is left. On the left this is

also apparent, but to a less degree. The muscles of the shoulders and back presenting the most extreme atrophy are, on the right side, the deltoid, supraspinatus, and infraspinatus, serratus anticus (which presents a remarkable degree of wasting), trapezius, with the exception of its occipital bundles, teres major and minor. The latissimus, pectoralis major and sternocleidomastoid are affected to a less degree. The rhomboids are quite well preserved when contrasted with the right.

There is no fibrillary tremor in any of the partially wasted muscles and no response to tapping. The size of the lower extremities is not far from normal, but there is a suspicion of atrophy in

the left peroneal group.

There is a marked Romberg symptom, and inability to stand on one foot or to raise himself on tiptoes, and inability to walk backward. There is considerable ataxia of locomotion. The kneejerks and ankle-jerks cannot be elicited. In the lower extremities there is marked diminution of sensibility, especially for pain, and sensation is greatly delayed. He says "now" in response to a severe prick of a pin in from three to four seconds in different parts of the lower extremities, and the maximum pain is not attained for several seconds. Sensibility of the upper extremities is well preserved. Temperature sensibility normal. The pupils react moderately to accommodation, but not to light. The patient complains of great heaviness of the lower extremities, paroxysmal lancinating pains, and of girdle sensation. Cold weather or exposure aggravates his symptoms markedly and causes frequently distressing weakness of the sphincters. The atrophy of the muscles has apparently come to a standstill.

The most legitimate interpretation to put upon this case, it seems to me, is that the patient had multiple neuritis probably of alcoholic origin, and that the motor nerves of the upper extremities and shoulders were so profoundly diseased that they never regenerated. Whereas, those of the lower extremities being very much less affected, quickly recovered. The most serious objection to this interpretation is that the sensory nerves of the upper extremity were spared. It may well be, however, that at the onset of the probable neuritic process they were affected as well. Despite the fact that the toxic effect of alcohol is most apt to be expended upon the sensory nerves, cases of alcoholic motor neuritis are not uncommon. If we do not adopt this idea of the muscular atrophy the case must be looked upon as one of muscular atrophy of spinal origin, and against this conception a number of factors speak. In the first place the suddenness of onset, rapidity with

which it developed and destroyed the muscles, the uniform manner in which it affected all the muscles and its absolute cessation are very unlike the manner in which spinal progressive muscular atrophy comports itself. The most distinguishing clinical feature of the latter disease is the selective manner in which it destroys groups of muscles of an extremity, leaving others untouched. The insidious way in which it attacks the muscles, the existence of fibrillary twitchings, the course of the disease are all very different. The lesion may have been a chronic anterior poliomyelitis, in fact there is nearly as much to be said in favor of this diagnosis as of that of motor neuritis.

The third case of muscular atrophy associated with tabes that I shall speak of is one that is mentioned here more because of the interesting question in diagnosis that it presented rather than because it comes in the category of the cases that I have been describing: D. T., a barman, forty-two years old, contracted syphilis at the age of twenty-four, and had very little specific treatment. A vear later he had an attack of iritis. When thirty-four years old he had a cerebral seizure in which he was very dizzy and fell to the ground but was not unconscious. For two days he did not speak correctly. There was no paralysis accompanying or following the attack. Before this attack he had suffered for a number of months with headache. Four years later he had a similar attack. His present illness was preceded for a number of weeks by mental depression. On August 18, 1902, while eating supper, he fell from his chair to the floor. He was only partly unconscious he says, for he knew those that helped him to bed. The following day the right arm and leg were equally paralyzed and he had dysarthria, but no real aphasia. When he came to the hospital the hemiplegia had so far recovered that he was able to walk slowly with the aid of a stick. The degree of recovery was greater in the leg than in the arm. On examination of the right upper extremity a marked wasting of the muscles of the shoulder cap was seen. This was so great that the head of the humerus dropped from the glenoid cavity. There is no evidence of fibrillary contraction in the atrophied muscles, and they react sluggishly to the electrical currents, more so to the faradic than to the galvanic current. Further examination shows absent knee-jerks and ankle-jerks, pronounced hypotonia of the left lower and upper extremities, Romberg's sign, Argyll-Robertson pupils, diminished sensory acuteness over the circumference of the body, corresponding to the 9th and 12th ribs, and in the feet and legs. Plantar jerks exaggerated, both of the extensor type, the right constituting a typical Babinski phenomenon. The patient has scarcely any symptoms of tabes save impotency and occasional incontinence of urine, and the disease was not

suspected until its existence was revealed by the examination.

The muscular atrophy which he shows may be explained in one of two ways, either it is dependent upon a peripheral lesion, such as a neuritis of the circumflex and other nerves of the brachial plexus, or it is due to a thrombosis of the cornual branch of the anterior spinal artery, similar to the thrombosis within his brain that caused the hemiplegia, with resulting limited neurone destruction. At the present time it is impossible to say upon what the atrophy is dependent. The fact that it seems to be slowly progressive speaks in favor of the latter view. The case is of interest



Fig. 1

in showing that an attack of cerebral apoplexy with consecutive degeneration of the crossed pyramidal tracts, as evidenced by the Babinski phenomenon, does not cause a return of the knee-jerk. In this case it is extremely probable that unequivocal signs of tabes antedated the attack of cerebral thrombosis upon which the hemiplegia is dependent.

Some of the cases of tabes and muscular atrophy that have recently been published in addition to those already mentioned, are the following:

Wagner⁶ reports two cases. The first case, a thirty-six year old laborer, who had been ill eighteen months, said that weakness and wasting of the extensors of the right foot set in shortly after a course of mercurial inunctions. The affected muscles showed

⁶Inaug. Dissertation, Berlin, 1896.

partial reaction of degeneration. The author thinks that the neuritis may have been of mercurial origin, but considering that the reality of mercurial neuritis is not generally granted, this seems very improbable.

The second case, a woman forty-seven years old, with signs of lues and symptoms of tabes, complained of weakness of both forearms; the thenar and hypothenar eminences were flattened, the interossei likewise atrophied, giving the typical claw-hand. There was partial reaction of degeneration in the nerves.

V. Ufen⁷ reports a case of tabes dorsalis and muscular atro-



Fig. 2

phy, in which there was wasting of the muscles of the hand, shoulder and the thighs. There were no electrical changes. At the anatomical examination there was found a well marked spinal meningitis in addition to the typical posterior cord root degeneration, but no atrophy of the anterior horns. The peripheral nerves were not examined, but Ufen does not doubt the neuritic nature of the muscular atrophy, as the anterior horns were normal.

Jolly⁸ has recorded a case of tabes with muscular atrophy which was quite profound in one lower extremity and in both upper extremities. There was very little disturbance of sensibility in the arms.

⁷Inaug. Dissertation, 1896, Kiel.

Berliner Gesellschaft f. Psychiatrie u. Nervenkrankheiten, March 9, 1891.

Chretien and Thomas9. Their first case in which there was atrophy of the lower extremities of rapid development and slight atrophy of the arms, showed on autopsy in addition to tabes, widespread degeneration of the ganglion cells of the anterior horns in the lumbar region. The changes in the peripheral nerves were distinct, but not so marked. In their second case the anterior horns showed only slight changes, whereas there was profound peripheral neuritis.

E. W. Taylor¹⁰ has recently published a very striking case of progressive muscular atrophy of the muscles of the hands and forearms, which, from the clinical point of view, seemed to indi-

cate degeneration of the peripheral motor neurones.

EXPLANATION OF PLATES.

Plate A-Transection of the ulnar nerve showing the greater part of the nerve transformed into fat tissue and interstitial fibrous tissue. Also the enormously thickened blood vessels, take up a considerable portion of the tissue that remains. Of the still remaining nerve bundles many show considerable degeneration.

Plate B-Showing four degenerated nerve bundles, A, B, C, D, in a lumbricalis muscle.

Stained after Pal counterstained with Picro-acid-Fuchsine.

The nerve fibers show accordingly as black stripes in the longitudinally cut bundles B, C, D. Note the ragged appearance and scarcity of nerve fibers in the four degenerated bundles A, B, C, D, especially in A and B. Fat __fat tissue.

Plate C—From the same section as Fig. B. showing, also in a lumbricalis muscle, numerous degenerated nerve bundles in which the scarcity and irregular ragged aspect of the nerve fibers are very evident.

Verm. = vermiform muscular fibers.

Fat _fat tissue.

Atr. M. = atrophic muscular fibers.

M. transv. = transversely cut muscular tissue.

Plate D-Taken from a lumbricalis muscle from the same section as plate B and C. It shows two muscle spindles, with thickened capsula, but apparently well preserved muscle fibers. Between the two muscle spindles lies a degenerated little nerve bundle, cut obliquely.

M and M are two muscle fibers of the lumbricalis muscle.

Revue de Mèdecine, 1898, November, p. 886. 16 Boston Medical and Surgical Journal, 1902.





PLATE B.





PLATE C.



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CONTRIBUTION TO THE STUDY OF THE ACHILLES-JERK AND THE FRONT-TAP.

By G. L. Walton and W. E. Paul, of boston.

The recent activity in the study of the reflex mechanism has brought to light a great number of movements involving a large part of the musculature. The importance of each new reflex is urged, the character of each is minutely discussed, and the priority of observation disputed. It would not be right at present to deny the importance of any of them, for we can all remember the time when we held, and taught, that the plantar reflex with its variations was of no import practically, and was never likely to take a place among the major tests in diagnosis. This reflex now stands perhaps at the head of the list from which it was formerly excluded. Whatever prominence these new reflexes may attain in the future, two phenomena, though long recognized, seem not yet to have received quite the attention they deserve, namely, the Achillesjerk and the front-tap. The Achilles-jerk has been extensively studied, but has not taken the place it should, at least on this side of the water, as a routine test of equal importance with the kneejerk; the front-tap has not even been extensively studied.

The object of this paper is to emphasize the importance of the one and to contribute toward the study of the other.

THE ACHILLES-JERK.

The result of our study of this (so-called) reflex coincides with those of most observers. We have found it in health equally constant with the knee-jerk as, with the exception of Strasburger, have other observers. (Bramwell, Sarbo, Cestan, Schoenborn, Kollarits.) We have also found it more uniform in excursion and more easily elicited than the knee-jerk. We have found it disappearing early in tabes, and regard its loss quite as typical of this disease, as the absence of knee-jerk. These results are in accord with those of other observers (Babinski, Mills, Collins, Bramwell, Seyer, Goldflam, Trumporszki). We have found it increased as a rule in hypertonic, and decreased in hypotonic conditions.

¹Read at the meeting of the American Neurological Association, May 12, 13 and 14, 1903.

We have employed the various methods suggested for testing this reflex, and find little to chose between having the patient kneel in a chair, and having him sit in a chair with the knee bent to a right angle, or to an angle slightly more acute. If the patient is in the latter position the heel can be seen to rise if the reflex is active, but it is best to place the hand on the calf and to judge its activity by the muscular contraction rather than by the movement of the foot. For purposes of demonstration the kneeling posture is preferable. It is better to have the patient kneel on a cushion or a shawl rather than on a hard wood seat, for many persons find the latter so uncomfortable as instinctively to put the muscles under a tension which interferes with eliciting the reflex. Some find it difficult to relax in this situation in any event, and for such the sitting, or even, as Sarbo suggests, the recumbent posture may be tried to advantage. Muscular tension on the part of the patient interferes less, however, with the Achilles than with the knee-jerk, an additional argument in favor of its routine use. For patients in bed we use the methods of Strasburger and Ziehen (with knee straight and flexed respectively), with such modifications as the circumstances demand.

In the majority of cases the reflex can be obtained without removing the shoes, but this precaution should never be neglected in doubtful cases. In some instances it is best obtained by tapping the middle of the tendon, say two inches above the os calcis, in others by tapping the tendon close to its insertion, and sometimes better on one side. Less technical skill and less practice are required to obtain this reflex than to obtain the knee-jerk. It follows that as this test comes into general use, the records of those not specially skilled will be more reliable than they are at present regarding the knee-jerk.

The Achilles-jerk in health. We have examined 500 persons of both sexes varying in age from five to eighty-two years, either in apparently perfect health or suffering from some trouble independent of the nervous system, and have failed to elicit this reflex on both sides in only one instance, on one side in four. In these five instances the knee-jerk was present. The knee-jerk was present in every case; in two it required reinforcement on one side, but was easily elicited on the other, and in eleven the knee-jerk was so feeble as to require repeated tests with reinforce-

ment; in these thirteen instances the Achilles-jerk was easily demonstrated. In a single case, an active knee-jerk was combined with an Achilles-jerk so feeble as to be elicited with great difficulty.

One of the cases of diminution of patellar and presence of Achilles-reflex was a man of eighty-two; in another, a man of forty-nine, diphtheritic paralysis had occurred at the age of twenty-five, before which the knee-jerk was present and active. The latter history led to an inquiry as to the previous history of the cases of unilateral feebleness of knee-jerk. It appeared that one of these individuals, a healthy man of twenty-eight, had in infancy a severe attack of diphtheria not followed by paralysis; the other gave a history of repeated and severe sore throats.

The question seems pertinent then, whether prior toxic influence may not sometimes cause the enfeebled, or even absent, knee-jerk occasionally found in health. If this was the case in the two instances cited, these observations only serve further to illustrate the hardiness of the Achilles-jerk, since this phenomenon was active in both.²

Though the excursion and activity of the Achilles-jerk in our cases varied to a certain extent in different individuals, it was constantly noted that these variations were appreciably less than those of the knee-jerk. In an occasional case it has been somewhat stronger on one side, as has the knee-jerk.

The result of these observations, coupled with those of others, led to the conclusion that the routine test of the Achilles is of equal importance with that of the patellar reflex in eliminative diagnosis and in the establishment of neural health.

The Achilles-jerk in disease. In thirty-five cases of tabes dorsalis we have found none with preservation of this reflex except one case in which the symptoms were unilateral and all reflexes were normal on one side. We have found two cases with

²It is worthy of note in this connection that Pfaundler found the kneejerks absent in 27.5 per cent of 200 cases of croupous pneumonia in children.

Dr. McCollom, who, as the head of the contagious service at the Boston City Hospital, has seen some 10,000 cases of diphtheria, states in answer to an inquiry that the knee-jerk is wanting in the majority of serious cases of this disease. He questions whether cases of so-called croupous pneumonia are not frequently cases of diphtheria of the lungs, the physical signs of the two affections being identical.

present knee-jerk on both sides and with absent Achilles-jerk on both sides.

These observations tend to corroborate the opinion of most other observers, that the Achilles-jerk is, as a rule, the earlier to disappear in tabes.³ This is a most important practical point in diagnosis. Suppose, for example, we are consulted by a person with feeble or absent knee-jerk. If we find his Achilles-jerk present we may reassure him with considerable confidence as to any suggestion of tabes in his absent knee-jerk. If the Achilles-jerk is absent we cannot so reassure him, though it would be going too far to say that this combination establishes tabes, for it may also be found in other hypotonic conditions.

In other directions our data while too few to be used alone for statistical purposes, may be suggestive. We have found this reflex present, generally active, in thirty-eight cases of epilepsy usually accompanied by active knee-jerk; it was diminished in only one case, a case in which the knee-jerk was present. All these patients were taking bromides, generally not less than 60 grains daily.

This finding is in accord with the statement of Clark, who finds the knee-jerk generally active in this disease except during the attack, when it disappears. He regards this activity as an exhaustion phenomenon. As far as we have been able to discover, no other statement has been made regarding the reflexes in this disease, excepting during and immediately following the attack. In exophthalmic goiter we have found the Achilles-reflex present, generally active, in eight cases, wanting in none. In neurasthenia, hysteria and other neuroses we have found this reflex always present, but less active and disagreeable than the knee-jerk. In fourteen cases of paresis both Achilles-jerks and knee-jerks were increased in seven, decreased in two, average in The knee-jerk and Achilles-jerk were exaggerated in twenty-four cases of hypertonic paralysis including hemiplegia, wanting in three old cases of hemiplegia with contracture. In hypotonic conditions the Achilles-jerk has always been absent. The Achilles-jerk was wanting on the side of sciatic pain in one case of osteoarthritis of the spine.

^aBramwell's results varied slightly from those of other observers in that although he found loss of both reflexes in 48 cases out of 52 examined, in the other four the loss was equally divided between the two reflexes.

THE FRONT-TAP.

The study of this reflex (named by Gowers) seems to have been meager. Search through the literature reveals the fact that neither its physiology nor its diagnostic significance has received attention. The method of testing the front-tap consists in smartly tapping the tibialis anticus with a Taylor rubber hammer (less advantageously by the finger), the examiner meantime flexing the foot dorsally, and holding it in this position, the ankle resting on the knee of the examiner or on the edge of a stool (preferably slightly lower than the chair upon which the patient is seated, or with the leg extended if the patient is in bed). The reflex consists in plantar flexion of the foot.

Gowers suggests that the stimulus may pass through to the flexors of the calf, and he has called attention to the fact that the vibration may be felt in the gastrocnemius. This explanation is weakened by his observation that the phenomenon is less readily produced, if at all, by tapping the shin-bone. As regards the significance of the front-tap, Gowers speaks of it as occurring when the reflex phenomena are in excess, and again as a very delicate test of increased irritability.

The explanation offered by Gowers regarding its production does not seem quite satisfactory, and while we are not sure that we can better it, we would suggest that it may be allied in a way to the ankle-clonus, though not of its sinister import. May it not be the case that in taking the front-tap the position of the foot in extreme dorsal flexion (and this generally is the most favorable position) puts the tendo-Achillis under such tension that the trifling tendency for the tibialis anticus to contract and thus still further dorsally flex the foot is enough to stimulate, or tend to stimulate, the gastrocnemius into a contraction? An observation occasionally made tends to confirm this view. Namely, in a rare instance evident dorsal flexion of the foot precedes plantar flexion. In fact, sometimes the only movement is an upward one. In many, perhaps in most, cases in which the front-tap phenomenon is present, there is visible contraction of the tibialis anticus.

Whatever the mechanism of this phenomenon may be, its significance seems to have been not completely interpreted, probably because no systematic test has been made of its presence or absence in health.

The front-tap in health. We have made this test in 500 persons, all of whom were either in apparent health or were subjects of disorders having no recognized influence on the central nervous system. Of these individuals 200 were males and 300 females. The ages varied from six to eighty-two.

The result of this examination showed the front-tap present in 75 males, or 37.5 per cent, and in 124 females, or 41.3 per cent. In many of these cases it was extremely lively. In an occasional instance the difference between the two sides was sufficiently marked to cause the phenomenon to seem absent on one side at the first test while present on the other, but in such cases more searching examination generally established its presence on the side first tested.

It is possible that in a larger number of these cases the reflex could have been teased out by persistent effort, but whether this is so or not the fact seems established that the mere presence of the front-tap, even in active form, does not militate against perfect health.

In order that the test might be made in one series from which the question of ill health could be practically eliminated, 59 picked young women taking the course in the Boston Normal School of Gymnastics were tested through the kindness of the director, Miss Amy Morris Homans.

Out of the 59 cases the front-tap was present in 15, that is, in about 25 per cent.

This series is mentioned as demonstrating the presence of the front-tap in health. The number of cases is too few to warrant drawing a comparison between the athletic and the average individual in respect to the front-tap, but further elaboration of this comparison in the matter of all reflexes might prove of interest.

We have not found the position of the knee, straight or flexed, of importance in eliciting the front-tap. One precaution should be mentioned, however, in this connection, namely, to avoid pain in patients with sciatica, osteoarthritis of the spine, and allied conditions, it is well to have the foot much lower than the knee, or else to make the test with the patient in the recumbent posture. In very rare instances healthy persons complain of slight discomfort if the leg is placed as pictured by Gowers, a fact which has led us to allow the knee of the person examined to be slightly flexed.

The front-tap in disease. Our observations tend to show that this test, though of less positive value in diagnosis than the Achilles-jerk, may be of material aid in connection with other signs and symptoms.

In neurasthenia, hysteria and other neuroses we have found the proportion of front-taps greater than in health, namely in 59 out of 80 cases (70.4 per cent); namely, hysteria, present in 14, absent in 6; neurasthenia, present in 31, absent in 9; other neuroses, present in 14, absent in 6. In 8 cases of goiter it was present in 7 (87.5 per cent). In an epileptic attack the front-tap disappears with the knee-jerk. In 100 cases of epilepsy the front-tap was present in 75 (in several only on one side), absent in 20, impossible to test on account of position of limbs and mental condition in 5.

We have in no case found the front-tap present in tabes or other hypotonic affections; in paresis we have found it present in 8 out of 14 cases. In other diseases involving hypertonic conditions, including hemiplegia, we have found it present, generally exaggerated, in 24 out of 28 cases. Three of the cases in which it was wanting were old hemiplegics with contracture and absence of other reflexes; one was a case of probable meningitis and encephalitis of infectious origin with absent knee-jerk and present ankle-clonus, a combination elucidated by Mills, the absent knee-jerk being due, perhaps, in this case, as in that of Mills, to neuro-muscular infection, though autopsy could not be obtained to decide this question.

For opportunity to add to our statistics we are indebted to our colleagues in the Massachusetts General Hospital, to the staff of the Eye and Ear Infirmary, the State Hospital at Tewksbury, and the Long Island Hospital, also to Dr. Fuller of the Adams Nervine Asylum, and Dr. French of the State Hospital at Medfield.

From the numerous instances illustrating the practical aid in diagnosis furnished by these reflexes we will cite two only, both of general paralysis, one showing the hypertonic, the other the hypotonic variation in this disease.

Case I. A man forty-four years of age complained of numbness in the left side and of frequent epileptiform attacks of recent onset. Both the patient and his wife seemed inclined to attribute his condition, largely at least, to a blow received over the right car from an iron bar six months ago. There was brief unconsciousness, the patient being able to get up and go home. There were evidences pointing to exaggeration, for example, the extreme tenderness complained of at the point of injury seemed to disappear when his attention was distracted; the test for anesthesia also was inconclusive.

The knee-jerks and pupils were normal and there were no other definite signs elicited by physical examination until the Achilles reflex was tested; this was absent on both sides. Further examination of the mental condition showed inability to carry test sentences in mind or to repeat them correctly. The writing also showed evidence of mental deterioration. In keeping was the statement of his wife that there was marked change in disposition and that he was not to be depended upon for errands or other duties.

In this case the absence of Achilles reflex was the one sign which enabled us to diagnosticate organic disease (general paralysis) with a confidence which would hardly have been justified under the circumstances either from his mental exhibit or from the history.

Case II. A man of forty-four years of age, for some time under observation at the Massachusetts General Hospital, had been regarded as a case of early tabes notwithstanding the preservation of knee-jerks and Achilles reflex. The diagnosis was based on the characteristic pupils and other symptoms.

The routine test revealed an active front-tap. This led to a reconsideration of the diagnosis, and further examination demonstrated the mental condition characterizing the early stages of general paralysis.

CONCLUSIONS.

- I. The Achilles-jerk is practically as constant in health as the knee-jerk. This reflex varies less in health than the knee-jerk in excursion and activity, and is the most easily elicited and uniform of all tendon reflexes.
- 2. The Achilles-jerk disappears, as a rule, early in tabes dorsalis, and its absence is as diagnostic of that disease as is loss of the knee-jerk. We have not seen a case far enough advanced to establish tabes with persistence of the Achilles-jerk, except one case in which both the knee-jerk and the Achilles-jerk were present on one side only. We have observed bilateral preservation of knee-jerk and loss of Achilles-jerk in two out of five cases of tabes.
 - 3. Enfeeblement of knee-jerk in health on one side or both

may be due to prior toxic influence, as diphtheria. This may also be true of the Achilles-jerk, though in the one case in which it could be demonstrated of the knee-jerk, the Achilles-jerk was normal. Further observations on this point are desirable.

- 4. The front-tap is present (generally on both sides) in about 40 per cent of individuals in ordinary health; in some it is very active. It follows that its presence alone, even if active, does not establish disease, nor indicate excessive irritability of the nervous system.
- 5. In organic disease the front-tap is generally increased with the other reflexes in hypertonic, and decreased (generally wanting) in hypotonic states.
- 6. In the so-called functional disorders, hysteria, neurasthenia, and unclassified psychoses, we have found the front-tap present in 71 per cent of cases. In epilepsy we have found it present in 75 per cent of cases. The test may therefore here prove of aid in combination with other findings, though its mere presence or even activity is not of positive diagnostic value, nor does its absence negative the existence of neuropathic conditions.
- 7. Both these reflexes deserve to be placed upon the list of routine tests for purposes of diagnosis. This is particularly true of the Achilles reflex, which is of the greater positive diagnostic value.

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THREE CASES OF PROGRESSIVE MUSCULAR DYSTROPHY OCCURRING IN THE MALE MEMBERS OF A SINGLE FAMILY, AND COMMENCING AT THE SAME AGE IN EACH.

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In the following report I desire to put on record three cases of progressive muscular dystrophy occurring in a single family, two of which were seen by the kindness of Dr. Edward Evans, of La Crosse, Wis., at whose suggestion they are published. The cases seem noteworthy in the following points:

- (1) The apparent absence of etiological factors and especially of hereditary influence.
- (2) The susceptibility of the boys and immunity of the girls of the family, to the disease.
- (3) The remarkable uniformity of the cases in age of onset and in the course of the disease.

The patients are the children of Christian W., born in Germany in 1847, and Marie, his wife, born in Germany in 1857, who were married in 1875, and are the parents of ten children. The parents emigrated to the United States in 1873. The father has been employed as a day laborer, and at present works in a railroad coal yard. He has always been well except for "rheumatic attacks," which affect his back. Of these he has had three. He has not a marked alcoholic history, but is a moderate drinker of beer. The mother has always been well except for measles and a severe attack of scarlet fever when she was twelve years of age. She was then ill for twelve weeks. No history suggestive of syphilis is to be obtained in case of either parent. The father and the mother both have brothers and sisters, all of whom are reported as well. No history could be obtained of paralysis or muscular trouble of any sort in the family of either parent.

The children are: Charles, born in 1876, death from burns in 1879; Ida, born in 1879; Bertha, born in 1881; Hugo, born in 1883, death in 1898; Allie, born in 1886; Edward, born in 1889, death in 1902; Fritz, born in 1891; Meta, born in 1895; Lillian, born in 1896; Esther, born in 1899.

The births were all natural and not difficult. The girls of the family are all in good health. They are as yet unmarried. The

boys are affected with progressive muscular dystrophy of a scapulo-humero-femoral type. The histories of the boys as given by the mother are very similar and are as follows:

Hugo, the oldest, was always pale and sickly, and complained much of his stomach hurting him. When about five years of age he seemed to be getting weak; his knees would give way and he would fall. He would have to help himself up by holding on to a chair or convenient object. He was never subject to convulsions or febrile attacks. When about nine years old he became unable



Figs. 1 and 2—Photographs of two of the patients with progressive muscular dystrophy. Edward (the larger boy) and Fritz (the smaller boy).

to walk at all. He sat in a chair for six years, when in the mother's words "he began to cough and coughed for six weeks and died."

Edward, when a year and a half old, passed "blood" in his urine for a week. He has never done so since, and has never been really ill since. He played about like other children until he was five years old, when he began to get pale and weak and lost his ap-

petite. He was thought by some to have rickets, by others worms. The weakness continued, and then his knees began to give way. In his sixth year he complained of pain in his elbows, knees and ankles (at present, 1900, he has no pain anywhere). The boy kept around but grew weaker and slowly wasted. The wasting, however, was not extreme until 1897. During the next year the patient became so weak he could not walk, and since then he has sat in a chair continually.

Fritz, the youngest boy, was never ill until his fifth year, when he began to get weak as had his two brothers before him. This weakness continued until in the early part of the year 1900 he found that he could not walk, and took to a chair. In no one of the boys could a history of any hypertrophy of the muscles previous to the atrophy be obtained.

Edward and Fritz were first seen in March, 1900. Edward (Fig. 1), aged eleven years, showed extreme pallor, a masklike expressionless face, and very marked muscular wasting. He was seated in a low chair with his legs flexed on his body and at the knees, and his feet held in an equino-varus position. His chest was flat and his abdomen slightly protuberant. His pupils were equal. Consensual and direct reflexes present. Patient raises evebrows, smiles, shows teeth, etc., to normal extent, and apparently with normal power. He can whistle well. Degeneration of muscles of shoulder girdle is extreme, pectorals almost indiscoverable, trapezius, deltoid, infraspinatus extremely wasted, supraspinatus less so. On attempting to lift patient with hands placed beneath his arms, his shoulders slide up almost to his ears. Wasting of the upper arm muscles is also marked. The biceps is contracted and like a tense cord resists full extension of the arm at elbow. Muscles of forearm and hand show no atrophy. The grip is good. Patient is able to raise his right arm over his head and can hold it at the horizontal; cannot raise left arm to the horizontal.

The atrophy in the legs is confined chiefly to the quadriceps group. The patient is unable to extend leg on thigh even to a right angle, owing to the strongly contracted hamstring muscles. There is no special atrophy below the knee. The foot is held in a slightly equino-varus position.

Knee-jerks were not obtained, nor were the triceps and biceps reflexes. No electrical examination was made.

Fritz (Fig. 2), aged nine years. Muscular wasting well marked, yet somewhat obscured by a considerable development of subcutaneous fat. His chest is flat, his abdomen protrudes. His face is brighter than that of his brother. The muscular power of the face seems intact. His pupils react normally. The pectoral wasting is marked. There is considerable wasting also in the deltoid, infraspinatus and triceps. The shoulders slide up easily. Patient can raise both arms above head; has no contracture of arms; can extend arm at elbow fully.

In the legs there is marked wasting of the quadriceps group only. He extends the leg at knee, but with no power; has as yet no contracture of hamstrings. Knee-jerks not obtained.

The patients were seen again in August, 1901, when there was little change noticeable in their condition. The younger showed slightly more atrophy but retained still considerable subcutaneous fat.

Edward, the elder, died in March, 1902, of an intercurrent infection. No autopsy was obtained.

REMARKS ON PRIMARY NEUROTIC ATROPHY (CHARCOT-MARIE-HOFFMAN TYPE), WITH REPORT OF A CASE IN WHICH THERE WAS EXCESSIVE IN-DULGENCE IN TEA AND COFFEE,¹

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The clinical varieties of progressive muscular atrophy are not as yet sharply defined. Within the last few years a number of facts have accumulated, showing the difficulty of differentiating distinctly the types to which certain forms of muscular atrophy belong. Symptoms which were considered characteristic of one form are now found to be present also in another, as for example, the reactions of degeneration, fibrillary twitching, or the mode of development of the atrophy.

The progressive muscular atrophy described by Charcot and Marie, and later by Hoffman, presents a variety which is difficult to classify, as the pathological findings are not identical in every case. The clinical picture of this form presents partly symptoms of Aran-Duchenne's disease, and partly symptoms of myopathy. However, owing to the fact that the initial symptoms are in the majority of cases identical, namely, atrophy of the peroneal group of muscles, the disease can be considered as a separate form. Moreover, if the spinal changes have not always been found to be absolutely identical, changes in the peripheral nerves have been observed in the majority of cases. The name neurotic or neuritic atrophy is justified, but it is doubtful whether the nature of the affection is always primarily in the peripheral nerves.

In cases which present spinal changes in addition to those of the peripheral nerves, it is extremely difficult to determine which of the two was the initial lesion. For this reason, the term spinal-neuritic atrophy would be more appropriate. In fact, the clinical picture of the majority of cases shows an almost simultaneous onset of the atrophy in the lower extremities and in the small muscles of the hand, thus imitating the picture of the Aran-Duchenne's type for the upper extremities. Charcot and Marie did not believe in the neuritic origin of their disease, but the

¹This paper was read and the patient was exhibited before the Philadelphia Neurological Society, February 24, 1903.

cases reported later show by microscopical examination that the disease is both myelopathic and neuritic. The few cases recorded with total absence of spinal changes, or with very slight changes in the cord (Dubreuil²) do not, in my opinion, exclude the possibility of a spinal involvement, as it is probable that the patients did not live long enough for the spinal changes to develop.

The case I am about to report is an example of this spinal-neuritic form of progressive muscular atrophy. The particular interest lies in the associated symptoms and in the history. It also shows the difficulty in classification.

Mr. S. T., aged thirty-seven, gives the following history: For twenty years he had been in charge of a grocery store, where he worked daily from 5 A. M to 12 P. M. He was constantly exposed to cold. In the winter of 1897, for the first time he felt pain in the toes of both feet. The pain was accompanied by a burning sensation. The suffering at times was so intense that he had to give up work. Application of heat would make the condition worse. For four and one-half years the only symptom was pain.

Three months ago he noticed that in walking he had to raise his feet very high, and that he could not flex the foot upon the

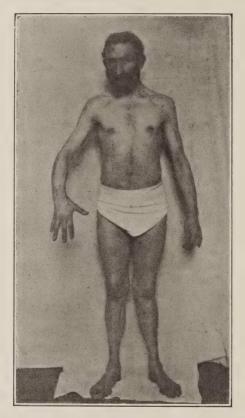
leg, especially on the right side.

Status praesens:—Inspection shows the legs emaciated, especially in the lower halves. The muscles of the thighs are also somewhat wasted, and the adductors are flabby. The calf muscles of both legs, and especially those of the right, are soft and flabby and give the impression of the pseudo-hypertrophic type of myopathy. The gluteal muscles are flabby. The feet are cyanosed and present the equino-varus type of club-foot. The patient stands on his metatarso-phalangeal articulations, the second and third phalanges are markedly bent downwards. The foot-drop is more marked on the right side than on the left. The nails have suffered considerably in their nutrition; some of them are absent and some are retracted.

The motor apparatus shows the following disturbances: Gait is ataxic and presents the typical high steppage, especially in the right limb. Station with closed eyes is only somewhat impaired. The knee-jerks are totally absent, even with reinforcement. The tendon of Achilles reflex is also absent on each side. No ankleclonus, no Babinski sign obtained. Fibrillary twitching is present in the muscles of both legs, in both the wasted and the apparently non-wasted muscles. Sensations are normal to pain, but hypesthesia to touch is found, and some delay is noticed in the temperature sense on each foot, but above the ankles it is normal.

²Review de Méd., 1890.

The upper extremities present some flabbiness in the muscles of the arms, but apparently no atrophy. The muscles of the first interosseous space of each hand are atrophied, also in a less degree the thenar and the hypothenar muscles of each hand. There is also ataxia for fine movements in each hand; and the patient buttons and unbuttons his clothes with difficulty. There is



Photograph of the patient, showing especially the emaciation of the lower limbs.

also some diminution of power in the hands. Sensations of the upper extremities are normal. The sphincters of the bladder and rectum are normal. Sexual weakness has existed for the last two or three years.

The pupils are equal, they react normally to light and in accommodation. No Argyll-Robertson pupil is found. The eyegrounds show an incipient degeneration of both optic nerves. Nystagmus is distinctly present when the eyes are turned to the right, but only slightly when turned to the left. The personal as well

as the family history is negative. He denies venereal diseases and alcohol. He indulged considerably in tea and coffee; the average daily quantity used to be about one hundred ounces a day of tea, and forty ounces of strong coffee.

He complains of pain and numbness in both feet. The electri-

cal examination gave the following result:

The peroneus longus, tibialis anticus, extensor hallucis longus muscles present distinct R. D. under galvanic current, and no

response to the faradic current.

The extensor digitorum brevis, and interossei pedis dorsalis muscles show that the CaCC=AnCC on the right side, and CaCC only slightly greater than the AnCC on the left side for the galvanic current, and marked diminution for the faradic electricity. The gastrocnemius on the right side gives very little response to the faradic and galvanic currents, but no R. D.; on the left side slight diminution of electrical contractility. The adductor muscles, the sartorius and quadriceps on either side present diminution of contractility to both currents. The first interosseus space on either side presents very marked diminution of faradic contractility and CaCC is but very slightly greater than the AnCC. The thenar and hypothenar muscles also present slight diminution of electrical contractility.

To sum up, this is a case of progressive muscular atrophy, affecting mostly the peroneal group of muscles. It also shows an involvement of some small muscles of the hands, thus reminding one of Aran-Duchenne's disease; it also reminds one of the pseudo-hypertrophic myopathy by the consistence and appearance of the calf muscles. The muscles which are distinctly wasted show marked diminution of electrical contractility and partial R. D. Total loss of deep reflexes in the lower extremities, fibrillary twitching of the affected muscles, nystagmus and incipient degeneration of the optic nerves, complete the clinical picture of the case. As a coincidence, or perhaps as a cause and effect, I mention the excessive indulgence in tea and coffee.

In comparing this case with those recorded in the literature as primary neurotic atrophy, we find here also an involvement of the upper extremities in addition to that of the peroneal group of muscles. There is also the equino-varus of the feet, the fibrillary twitching, and the complete or partial R. D.

As to the deep reflexes, although in some cases they were found to be exaggerated, in others however they were diminished or lost. My case therefore can be placed alongside of the others with the same symptomatology.

There are, however, a few points which deserve attention. The history gives no trace of a similar disease in any member of the patient's family, while one of the characteristic features of the affection is the existence of the disease in the family. The age at which the disease begins is usually earlier than in my case. Finally, the presence of the nystagmus and changes of the optic nerves are rather unusual.

On the other hand, the equino-varus, the scoliosis, the total loss of deep reflexes, ataxic gait and nystagmus are symptoms characteristic of Friedreich's disease. Finally, the condition of the eye-grounds, the absence of knee-jerks and tendo-Achillis reflex, the paresthetic disturbances in the lower extremities, and the marked impairment of the sexual function, will direct our mind toward tabes.

The case is instructive from the point of view that the line of demarcation between various forms of progressive muscular atrophy cannot be maintained. The latter disease comprises a certain number of types which may differ from each other in the etiology and in the clinical expressions, but they merge into one another and have one underlying basis, namely, a degeneration of the motor neurone, or only of one portion of it, and of the muscular fibers in which this neurone ends. None of the forms possess characteristic features, which would be considered as pathognomonic.

The resemblance of the case to tabes is not unusual, as the type of muscular atrophy under consideration may be accompanied by tabetic symptoms. There are on record cases in which in addition to the degeneration of the anterior roots and anterior horns a degeneration of the posterior roots and columns also was found.

A peculiarity of the case lies also in the fact that tea and coffee were used to a large extent.

In April, 1901, I³ exhibited before this Society a case of teaintoxication with symptoms of ataxic paraplegia. In discussing the pathogenesis of the cord lesion, I expressed the opinion that the theine, the essential oils of the tea, and the black lead which is used to give a bloom to black tea, are at least the three main ingredients of this beverage that are poisonous to the nervous system. Similar to alcohol, lead and mercury, they are apt to pro-

³Therapeutic Gazette, July, 1901.

duce spinal symptoms or symptoms of diseases of peripheral nerves. If not directly, they may produce a toxic condition, so as to predispose the peripheral or the central nervous system to various diseases.

The disease from which my patient is suffering began with a neuritis, as he experienced severe pain in the toes. The being obliged to stand in a grocery store in cold weather, a work which he had been doing for over twenty years, is not sufficient to cause a degeneration of the peripheral neurones, as examples of exposure without a neuritis are abundant. A special predisposition or vulnerability of the nerve elements is necessary. Is it not likely that the poisons of the tea and coffee which the patient absorbed in large quantities for a number of years, exercised a degenerative effect upon the nervous system and produced the spinal-neurotic atrophy he presents?

The rôle of intoxications (A. Gordon⁴) of any sort upon the nervous system is an established fact, but all the cases reported have reference to mineral poisons, while the effect of the beverages we are absorbing daily as articles of food has not yet been studied in all its phases. The importance of recognizing such a potent element as a causative factor in organic diseases of the nervous system has not yet been adequately realized. The therapeutist will perhaps be able to draw some practical conclusions from the history of this case.

I wish to express my indebtedness to Dr. John Wanamaker 3d for his assistance in taking the history of the case, and to Dr. Arnold for the photograph.

^{4 &}quot;The Rôle of Intoxications in Diseases of the Spinal Cord." Phila. Med. Jour., 1901.

Society Proceedings.

NEW YORK NEUROLOGICAL SOCIETY.

February 3, 1903.

The President, Dr. Pearce Bailey, in the chair.

Paradoxical Pseudo-Hypertrophy in Infantile Cerebral Hemiplegia.-Dr. L. Pierce Clark presented a boy of ten years with a family history of epilepsy, insanity, alcoholism, rheumatism and tuberculosis. The personal history was good, except that when five years old he had suffered from a severe attack of smallpox. This had been followed by infantile cerebral hemiplegia, the convulsions being general and lasting for hours. A left hemiplegia was noticed the day after the convulsion. Three months after the initial stroke he had status hemiplegicus unilateralis attended by high fever. There were 47 grand mal fits in four hours. At the time of presentation there were from three to five epileptic attacks daily with an epigastric aura. Hypertrophy of the calf on the paralyzed side was first noticed three years ago, but the left arm was moderately atrophic. The ankle also showed bony hypertrophy, a still rarer condition.

A Case of Myoclonus.—Dr. Clark presented a Jewish boy of eleven years having a negative family and personal history. Two years ago, without known cause a spasm developed in the left biceps, triceps, pectoralis major, latissimus dorsi and sternomastoid muscles, and in a few weeks the same muscles on the right side became involved. The spasm was clonic in character and occurred from twenty to forty times a minute, with never more than a few minutes of entire freedom from the spasm. In a few months the muscles of the pelvic girdle became affected, particularly the glutei, quadriceps and sartorius. Arsenic had been of no avail in suppressing the spasms. No spasms had been observed in the fingers or toes. The musculature was good, and there was no atrophy or sensory change. All the reflexes were normal. The diagnosis of myoclonus was made on account of the bilateral, clonic, lightning-like character of the spasms of the proximal muscles.

A Case of Multiple Neuritis with Intact Reflexes.—Dr. Clark also pre-

sented this case, a child of five years, an imbecile and possibly epileptic. The boy had apparently had an attack of meningitis last July. He now presented the high-stepping gait and the exaggeration of all the reflexes. There was a marked diminution in the response to the faradic current. At present, he was in the recovery stage of multiple neuritis, apparently of

lead origin.

Dr. J. Ramsey Hunt asked if in the case of myotonia there were a history of fright; also if the term, myoclonus, was used in the generic

The case had much in common with Henoch's chorea.

Dr. W. M. Leszynsky asked on what basis it was concluded that the multiple neuritis was due to lead. The distribution corresponded more to that of alcohol, and from the fact that the child had been taking beer, the

probability was that it was an alcoholic neuritis.

Dr. Clark said that he looked upon the case of myoclonus as of the Friedreich type. The history of fright usually had to be taken with a good deal of allowance. He did not think it could be of the choreic type referred to, because muscular atrophies occurred and ran a rapid course. The condition was not improved by the usual treatment for chorea. The case of multiple neuritis was first thought to be one of alcoholic origin, and an effort was made to obtain such a history, but the history of beer drinking was not at all satisfactory or definite. The child had been playing around a cellar and had freely dabbled in lead paint a short time before the illness.

Dr. Pearce Bailey thought the sharp, shock-like electrical contractions of the muscles and the peculiar sound emitted by the boy should lead one

to think of the type of electrical chorea.

A Case of Myokymia.—Dr. R. M. Daly presented a man of twenty-eight, a printer by occupation. There was no history of lead colic, and no family history bearing upon the case. For years he had engaged freely in athletic sports. About one year before coming under observation, after having walked for eleven hours, the calf muscles began to twitch. When first seen, last October, his general condition was good, as were also his habits. His gait and station were normal, and there was no paralysis of the muscles. Facial innervation was more marked on the right side. There was a fibrillary twitching of all the muscles of the legs and of the posterior muscles of the thigh. Sometimes the same bundle of muscular fibers would contract several times in succession. A blow upon the muscles brought out the contractions well. The electrical contractions were negative. There had been no evidence of atrophy during the time the patient had been under observation. There was no disturbance of the special senses, and the superficial reflexes were undisturbed. The knee-jerk was increased; there was no clonus or Babinski reflex. He had received increasing doses of strychnine and arsenic, and had received galvanic and X-ray treatment, but all without benefit. Quite recently he had been placed on gelsemium, and the twitchings had diminished somewhat.

Dr. C. L. Dana said that while the condition was not important he thought it was of interest to recognize it as a distinct symptom. Fibrillary twitchings were common enough in states of exhaustion of any kind. Myokymia occurred in neurasthenic states, and sometimes also

in alcoholics.

Non-Septic Cerebritis.-Dr. Harlow Brooks read this paper, reporting a case. He said that these cases had not been frequently reported in recent medical literature, and hence, the case he had seen seemed to be worthy of reporting. The disease was not so very rare, but it was the exception for it to be recognized because of our scanty knowledge regarding it. Microscopical examination in a considerable number of instances had been found to be the only certain method of recognizing the condition. A considerable number of cases recovered wholly or partly. The cases going on to recovery were apt to be set down as examples of hysteria. Metabolic poisons and those toxins produced by the growth or action of bacteria should be just as competent to produce inflammation as injuries. In all inflammatory diseases the question of the occurrence of hemorrhages depended upon the severity of the inflammation and the situation of the lesions. He had no sympathy with those who insisted that an inflammation was necessarily dependent upon bacteria or their products. Acute encephalitis might terminate in death if the disease involved parts of the encephalon essential to life. When complete recovery ensued it was probable that the inflammatory products were almost completely absorbed. When there was only partial absorption there would be more or less impairment of the functions of the brain. Such a condition not infrequently occurred in alcoholics or after severe attacks of insolation. The following case was then reported: The patient was a girl of nineteen years, by occupation a domestic. There was a history of headaches and bilious attacks. She was naturally rather dull. On the night previous to her entrance to the hospital she appeared to be as well as usual, but was found unconscious the next morning, and was thought to be suffering from poisoning. On admission, she was unconscious, and the respirations were stertorous. response to pin-pricks the hands and feet were withdrawn. The pupils were moderately dilated and reacted somewhat irregularly to light. She was unable to swallow and did not respond to the usual forms of stimulation. Kernig's sign was absent. On October 21, or two days later, the urine was normal except for a trace of albumin. The temperature varied between 100° and 101°F. Two days later some casts were found in the urine. On October 25, a bedsore appeared to be forming over the sacrum, and the temperature was rising. There was a leucocytosis of 14,000. On October 27 the patient took two ounces of water by mouth, but with this exception all nourishment had been by rectum. On October 30 she spoke once, as she had done on the previous day. The bedsore was getting rapidly worse. On November 1 she spoke rationally and complained of pains all over. Some nourishment had been taken by mouth. She was very uneasy during the night. On November 6 the temperature varied between 102° and 105° and the pulse between 140 and 160. She died with a temperature of 106°F.

Several blood cultures were taken before death, and these proved negative. An examination of the eyes was also negative. The necropsy was begun two hours after death, and was conducted by Dr. Janeway. Nowhere in the body was there any inflammation except, of course, in the bedsores. Slight cerebrospinal meningitis was found of the cellular type. There was also a general non-septic cerebritis, most marked in the cortex and particularly in the motor area. There was degeneration of many of the ganglion cells in the cortex, apparently of recent origin, and of many of the fibers arising from the large pyramidal cell layer of the cortex. There was diffused degeneration of many of the fibers passing through both internal capsules, and limited to no particular portion of the capsule. There was inflammation of the tissues of the cerebellum, though to a much less degree than in the cerebrum. There was degeneration of many of the descending fibers of the pons and medulla. There was also degeneration of the chief descending tracts of the spinal cord and of some of the fibers in the ascending There were cytoplasmic changes in the ganglion cells of the anterior horns of the spinal cord. The examination showed the case to be one of organic and not functional disorder. It seemed safe to assume that the cause was not an infection, and the almost unavoidable conclusion was that the lesions were of toxic origin, possibly bacterial. The patient had been in the habit of taking headache powders, and it was possible that this was responsible for the cerebritis.

Dr. J. Arthur Booth said he had seen this girl a few hours after her admission to the hospital, and had also been present at the autopsy. She was deeply comatose, and there was absolutely no previous history. The pupils were moderately dilated, and they reacted to light. There was absolutely no response to pin-pricks except in the feet and hands. He had been unable to make a diagnosis. At the autopsy the brain appeared to

him normal except that it was rather soft.

Dr. B. Sachs preferred to speak of this condition as a non-suppurative encephalitis. He had tried in a number of instances to recognize these cases and differentiate them from other cerebral conditions, particularly from apoplexy. However, he had found it extremely difficult to make the differential diagnosis. In children there was a special type in which the patient passed slowly into a state of unconsciousness, and remained in this state for some days or weeks, when consciousness was slowly regained. After this the most striking symptom was a persistent aphasia, though the general clinical picture was that of a cerebral hemiplegia.

Dr. W. M. Leszynsky said that he had had an opportunity of examining this girl about one week before her death. At that time her condition was similar to that described by Dr. Booth. He learned that the rise of temperature had been coincident with the progress of the extensive sloughing bedsore, and it was evident that the patient was then suffering from general sepsis. He was disposed to think that this condition of general sepsis

must have had considerable influence upon the post-mortem findings. He recalled a case in which a woman had remained unconscious for three months, requiring to be fed by the stomach tube during this time. Her condition was supposed to be due to ovarian trouble, and as at that time the fashion was to remove the ovaries for slight cause, both of her ovaries were removed without much benefit. She regained consciousness after the operation, and described her condition during the unconscious state. She died shortly afterward, and the post-mortem findings failed to throw light upon the nature of the case.

Dr. Joseph Fraenkel said that the existence of non-purulent encephalitis had been proved in the monograph of Oppenheim. He would adopt Oppenheim's teaching with regard to these cases. The absence of the usual etiological factors, the presence of only very slight focal symptoms, and the presence of fever should lead one to think of the existence of

non-purulent encephalitis.

Dr. Joseph Collins said that he was inclined to diagnosticate acute hemorrhagic non-purulent encephalitis rather frequently-indeed, it was rare for a week to pass without this diagnosis being made. It did not seem to him that there was very great difficulty in making the diagnosis. instance, a child of two and one-half years had been seen at his clinic that day. A short time ago it had become dull, inactive and irritable, and somewhat feverish. On the second day there was a convulsion lasting three-quarters of an hour, most marked on the left side. After the child had remained stupid for ten or twelve days it gradually regained its normal activity. On examination, there was a condition of hemiparesis with normal This case seemed to him a very clear one of non-suppurative encephalitis. In the class of cases referred to by Dr. Sachs he had never seen any rise of temperature, nor was there that degree of recovery which seemed to him so essential to justify the diagnosis of non-purulent encephalitis. He thought it was about as frequent as pneumonia, and the analogue of it. He had very grave doubt about the case reported by Dr. Brooks being one of non-suppurative encephalitis. There must have been just as great changes in the spinal cord as in the brain, otherwise there would not have been such a rapid and extensive development of bedsores. It was possible that there was present some intoxication that had not been revealed by the investigation, and which might explain the symptoms and the cause of death in some other way. The clinical description seemed to point to encephalomyelitis.

Dr. R. H. Cunningham said that he had seen two somewhat similar cases. One of them was in Mount Sinai Hospital many years ago. The history was that the young woman after a disappointment in love had begun to be sleepy and stupid, and then became unconscious. Pin-pricks or faradic stimulation of the skin caused some response at first, but in a few days she became deeply comatose. The temperature was moderate for a few weeks, and then it suddenly rose and death soon ensued. The autopsy findings were negative. He had examined some sections of the brain and spinal cord, and had found leucocytes surrounding the blood vessels. The Weigert method showed absolutely no change. The diagnosis at that time was sub-acute cerebritis. In 1895 he had seen a similar case, occurring in a school girl. The symptoms and course were about the same, but death occurred in about two weeks. The autopsy findings here were also negative. The microscopical examination of the brain gave exactly the same results. These findings were certainly not characteristic of any one disease.

Dr. Brooks said that undoubtedly the patient became septic from the large bedsore, but this was so shortly before death that the autopsy did not show the changes which were ordinarily observed in the organs under such conditions. On admission, the patient had fever, and the bedsore did not develop for a week or ten days afterward. If there were a septic condition arising from the bedsore there would have been a general infection of the

blood, and various micro-organisms would have been found in the blood, yet a very competent bacteriologist failed to find any such condition. All of the classical stages of inflammation were represented in the brain. He had made careful sections of the cord, but had been unable to find the inflammatory process which one would naturally look for as the cause of the bed-

sore.

Case of Myoclonus Multiplex of Friedreich.—Dr. J. Ramsey Hunt reported a case of this kind that he had seen in July, 1901, together with the autopsy findings. The man was forty-five years of age, a tailor by occupation, and a man of good habits. A few months before admission to Bellevue Hospital one knee had been operated upon for tuberculosis. The peculiar tonic contractions of the muscles began some months previously. There was a history of despondency from financial straits. The muscles of the arms and legs, and of the shoulder girdle showed very active twitch-The whole muscle would bound forward as if by an electrical stimulation. No tetanic contraction was detected. The face muscles showed none of these contractions. The latter were most active when the patient was recumbent. The isolated contraction of individual muscles, such as the supinator longus and the sartorius, was the most noticeable feature. Sensation was undisturbed. The tendon and skin reflexes were very active. There were no stigmata of hysteria, and no evidences of mental impairment. A few weeks later he developed fever, and died apparently of general tuberculosis. The myoclonus persisted throughout the acute febrilic attack and for fifteen minutes or more after cardiac pulsations had ceased. A careful examination was made of the Rolandic and other areas of the cerebral cortex, of the spinal cord at different levels by all of the usual methods, but with negative results. The affected muscles showed an unusually marked hypertrophy. The transverse striations were normal. In some places a central position of the nucleus of the sarco-

lemma sheath was noted.

Case of Choreic Tic, with Remarks on the Classification of Myospasms.—Dr. Charles L. Dana read this paper. He said that apparently no case had been observed in England, Scotland or Ireland, whereas the case of the control cases had been reported in this country, and two other cases had been reported under a different name. After carefully reading the descriptions he had come to the conclusion that no case of paramyoclonus of Friedreich had been reported in this country, not even the case just reported by Dr. Hunt, although it came nearer to that type than the others. The speaker then reported a case of paramyoclonus like those that had been published by other American observers. The patient was a man of forty-two with a history of the mother having had similar attacks during the time she was pregnant with this son. The man said that he had been healthy until the age of eleven years, when he had been rendered unconscious by the kick of a horse. Shortly after this the first attack of myoclonus developed. The trouble continued with various remissions for the 23 years which had elapsed before coming under Dr. Dana's observation. When first seen he was nervous, anemic and badly nourished. There was no disorder of the sensory sphere. When the attacks came on he was seized with rhythmic movements of the head, and the hands and feet quivered. During the attack there was considerable palpitation of the heart; he perspired profusely and became exhausted. These contractions came on at very short intervals, and were apt to last for several days unless he took some narcotic, when the attack would cease. The patient had not been improved by any treatment he had employed, including hypnotism. A short time ago the patient reported that his general health was much better, and that the attacks were milder and less frequent. Myoclonus multiplex, Dr. Dana said, occurred also in connection with epilepsy. Mention was made of a case of myoclonus that had been under observation for a number of years. The attacks had developed after an operation on the thyroid gland following an abscess. The contractions were both clonic and tonic, and involved practically the whole musculature of the body. He looked upon the case as a mixture of chronic chorea and tic. Myoclonus occurred in association with epilepsy, chorea, tic and paresis; it also occurred in family forms. All three types of myoclonus were distinctly degenerative types of mobile spasm. There was another group of myoclonus multiplex which occurred in the form of recurrent spasmodic attacks, although sometimes the attacks were continuous. The trunk muscles and the proximal segments of the body were chiefly affected, and the contractions were very violent and of a rhythmic character. These cases had been called hysterical myoclonus, but in the cases he had seen there had been no distinct evidence of hysteria. Fright or shock was a common etiological factor; his own case was of the family type. The cases reported by American observers approached more closely to a disease entity than did the case of Friedreich. He was inclined to think that the case of Friedreich belonged more properly to the class designated as myokymia. There had been reported cases of paramyotonus which ran a course quite comparable with that of paramyoclonus.

Dr. B. Onuf said that it was difficult to determine from the clinical reports found in the literature whether the muscles were hypertrophied or atrophied, and the subject was still further confused by the variations in the muscle fibers resulting from the use of various hardening fluids.

Dr. L. Pierce Clark believed that Dr. Hunt's case was a typical one of myoclonus. It was very evident that others had not met with Friedreich's type. In some recent experiments the injection of carbolic acid into animals produced a condition of myoclonus multiplex. Recovery almost never took place in a well marked case. The fact that over half of the cases reported had been associated with some form of disease, especially cortical, would seem to place the disease as cortical and not muscular. The treatment that he had found the most valuable consisted in the alternate use of bromides and chloral, with venesection and hypodermoclysis or enteroclysis at the time of the attacks. In many respects the symptomatology of myoclonus simplex and that of status epilepticus were similar.

Dr. Hunt said that the examination of many supposedly healthy muscle fibers had failed to reveal any like those in his case, the fibers in the latter being almost double the size of normal ones. It was not mentioned as an essential, but as an interesting finding. In his opinion, the distinguishing feature of myoclonus of the Friedreich type was the occurrence of contractions of individual muscles not under the control of the will except in conjunction with other muscles in the performance of co-ordinated acts.

Dr. Dana said that it was evident that we were dealing with two very widely different diseases, one represented by the case reported by Dr. Hunt, and the other, the myoclonus epilepticus described by Dr. Clark, and characterized by very violent contractions and coordinate movements. Dr. Clark had shown that the myoclonus of epilepsy was distinctly a cortical disease.

PHILADELPHIA NEUROLOGICAL SOCIETY.

February 24, 1903.

The President, Dr. H. A. Hare, in the chair.

The Changes Found in the Central Nervous System in a Case of Rabies.

—This paper was read by Dr. C. L. Allen. (See page 280.)

Dr. D. J. McCarthy said he had examined some of the sections from this case, and the lesions were minor as compared with those found in the dog, and were much less than those which he had seen in three other cases in the human being. In the present case, however, the inoculation experiments rendered the diagnosis positive. The presence of lesions in the cells of the capsules in the spinal ganglia in a case like this, with a history of alcoholism, would not be sufficient to render the diagnosis certain. The clinical symptoms in the case reported were not those of hydrophobia. In the three cases that he had seen there had been prodromal symptoms, followed by fever with a temperature of 103 deg. F., and symptoms of bulbar irritation. There was no special fear of water, but when the attempt to swallow was made the spasm would start in the throat and extend to the neck muscles, and afterwards to other parts of the body. In the interval there was depression. After a day or two delusions developed, and the case went on rapidly with heart failure and death. In none of the human cases was there the paralysis which is rather typical in the lower animals and which is of an ascending type.

Dr. William G. Spiller said that he had examined the specimens from Dr. Allen's case, and that the lesions were those which are found in many infectious diseases. He thought that it was quite possible that in this case the symptoms were modified by the condition of alcoholism. From the results of the experimental work he thought it probable that this was a

case of rabies.

He called attention to some observations which he had made a year or two ago. At that time only one or two investigators had referred to similar lesions in any condition except rabies. These lesions have since been found in other diseases than rabies.

Dr. William Pickett referred to the mental aspects of these cases. There is no insanity of rabies. Rabies, like other infectious diseases, is commonly accompanied by delirium. This begins in the prodromal stage, grows violent in the stage of maximum intensity, and in the third, or para-

lytic stage, subsides.

In the past year three cases have been admitted to the detention wards at the Philadelphia Hospital as cases of rabies. Two of these were young men with hysteria major, the third an imbecile girl, who "barked like a dog," though never bitten. The men had both been bitten, and later had become addicted to alcohol as a result of morbid fear of developing hydrophobia. In both cases he attributed the hysteria major to the alcoholism superimposed upon the nervous excitement set up by the fear of the disease. This mental excitement is preferably spoken of as delirium instead of as mania. His own view was that in Dr. Allen's case the delirium of alcoholism and of hysteria was mingled with that of rabies. The symptom of barking like a dog, and the fact that the patient became lucid for a time, would support this view.

Dr. H. A. Hare asked whether the occurrence of posterior paralysis, coming on in the animal after inoculation, were of positive diagnostic value. His own experience with animals was that many poisons, when

injected, are likely to produce posterior paralysis. In 1888 he had seen at the Brown Institution in London the deer sent from the Queen's preserves in Richmond Park for study. They developed posterior paralysis, but only after several days of delirium, in which they were mad, biting at their cages, acting in a manner quite opposite to their normal character. He raised the question, whether or not posterior paralysis without other symptoms possessed much value as a diagnostic aid in determining the presence of rabies.

Dr. Charles Lewis Allen said that in the case reported the clinical history was very fragmentary, and that he had not himself had an opportunity of examining the patient. With regard to the ascending paralysis, he had simply accepted the report of Dr. Ravenel, who had not entered into any details but stated that the clinical picture presented by the inoculated

rabbits was typical of rabies.

A Case of Traumatic Facial Paralysis Treated by Nerve Anastomosis. A Preliminary Report.—Dr. Harvey Cushing, by invitation, reported this case. The patient, a young man of thirty, was brought to the Johns Hopkins Hospital, March 29, 1902, having received a bullet wound posterior to the right ear, destroying the mastoid process, middle ear, and paralyzing the facial nerve. Six weeks later an effort was made to restore function in the paralyzed muscles by anastomizing the paralyzed nerve with the spinal accessory, whose motor territory was sacrificed for this purpose, the nerve being divided in toto and brought into relation with the main trunk of the injured facial.

By the middle of August (95 days after the operation) the patient was found to have regained considerable control over the facial muscles. The movements at that time, however, were not coordinated, and were occasioned chiefly in association with volitional movements, which called the trapezius and sternomastoid into play. Thus, for example, shrugging the shoulder or elevating the arm as well as rotating the head to the opposite side would produce a general, though not a pronounced, hemilateral con-

traction of all the facial muscles.

Soon, however, coordinate action of the facial muscles began to be appreciable, so that for instance the eye could be closed fairly well, or the lips puckered in an effort to whistle without calling forth associated shoulder movements or contraction in the other muscles of the face.

In October (168th day) faradic response was obtained for the first time in the facial muscles on direct stimulation. Not, however, until the 207th day was it found possible to elicit contractions from stimulation of

the nerve.

At present, nine months after the operation, the response from both direct and indirect stimulation of faradic and galvanic currents is practically equal on the two sides, the only difference being an anatomical one, namely, that the point from which stimulation of the nerve could be produced on the operative side was two or three cm. lower than on the normal side, owing to the dislocation of the nerve by the operation. The paralysis of the face at this time in repose is practically unrecognizable. On volitional effort the eyes can be closed and the mouth moved with almost complete symmetry. The associated facial movements, when the shoulder (trapezius) and head (sternomastoid) are vigorously moved, still persist.

So far as Dr. Cushing was aware, this operative procedure has only been twice described in literature. The first case was that operated by Faure in 1898, 18 months after the facial had been paralyzed by injury. The result was unsuccessful, probably owing to the long duration of the injury. The second case was operated upon by Kennedy, who intentionally divided the facial nerve for spasmodic tic and made an anastomosis with a result, which corresponds in all respects to that which has followed in Dr. Cushing's case. In consideration of the distressing and obtrusive deformity, which is resultant to paralysis of the N. facialis, it is a matter

of some surprise that more attempts have not been made to restore function in these cases by following the lead which Faure's description must have

The most interesting feature of this transplantation of nerves lies in the physiological consideration of the nerve mechanism, which recovery brings into play. In what way do volitional impulses, traveling over a new path to the motor territory whose original central connections have been severed, reach this territory? The answer to this question must necessarily remain conjectural until experimental observations on the higher apes have helped to solve its complexities. Several theories are worthy of consideration. It is possible, on the one hand, that the cortical centers concerned in shoulder movements and in rotation of the head may in the course of time be educated by long training so as to coordinate the impulses which have been sidetracked by way of the N. accessorius into On the other hand, cortical centers originally prethe facial territory. siding over movements of the face may continue to play a part in the coordinate action of these muscles, possibly by influencing the higher neurones connected with the N. accessorius through the intermediation of connecting cortical tracts. It is possible also that new centers may be developed, though this would hardly be expected to take place after adult life.

The study of Dr. Cushing's case has made it seem probable that voli-

tional and coordinate movements have, so to speak, been superimposed upon the incoordinate movements of the face, which first appeared during recovery in association with the action of those motor territories in which the trapezius and sternomastoid were normally concerned. Dr. Cushing's impression consequently was that there has been an education of the connecting fibers of the cortex between the facial centers and those associated with shoulder movements, so that the original facial centers have in the course of time assumed the function, to a certain extent, of governing these movements, the impulses reaching the face by way of the paths from cortex to spinal accessory centers in the upper part of the cord, and thence

to the face by way of the transplanted nerves.

Anastomosis of the Seventh and the Spinal Accessory Nerves for Traumatic Facial Palsy.—Dr. W. W. Keen reported this case. E. C., age twenty-one, Camden, N. J., was admitted to the Jefferson Medical College Hospital November 17, 1902, with facial palsy. Four weeks before admission he was struck with a glass bottle, which broke as it struck him, and inflicted a deep incised wound, 4 cm. long, in front of the left ear. Immediate paralysis of the left side of the face occurred. The wound suppurated, but

finally healed just before his admission.

Operation November 26.—Dr. Keen made an incision in the old scar and with great difficulty, owing to the fibrous tissue, was finally able to identify the seventh nerve in the upper part of the incision about at the level of the external auditory meatus. This was undoubtedly only the upper part of the nerve. He could not find the main trunk. He then extended the incision down to and along the anterior border of the sterno-cleidomastoid, lifted the muscle and discovered the spinal accessory almost at its posterior border. At this point it bifurcated, one branch entering the sterno-cleido, the other passing to the trapezius. On measuring the distance from the nearest point where the nerve could be turned upward to anastomose with the facial, he found that the main trunk would be too short and would not reach the seventh. Accordingly he made a second incision at the posterior border of the sterno-cleido, laid bare the branch to the trapezius, divided it and brought it under the sterno-cleido forward and attempted to anastomose it with the seventh nerve. It was still too short. He was, therefore, obliged to split the spinal accessory toward its root for about 3 cm. This gave him a long enough piece of the spinal accessory to anastomose with the facial, which was accomplished without any tension. In order to identify the facial, he used the faradic battery, using the

indifferent electrode on the shoulder and a copper wire electrode to find the nerve. At no time was he able to produce any contraction of the facial muscles by means of a current strong enough to make contractions of the shoulder. This added materially to the difficulties of the operation, for the nerve could be recognized only by its appearance and anatomical relations.

The patient made a perfectly smooth recovery and was discharged December 3, with instructions to report to the Neurological Department for electrical treatment of the muscles.

He has never presented himself for treatment. His present condition on February 21, 1903, is unchanged from what it was before the operation. Two days after the operation Dr. Alfred Gordon made the following

report as to the condition of the muscles.

Galvanic Current.—M. frontalis—No. RD, but the response is weak. M. orbicul. palpebr.—The CaCC is but slightly stronger than AnCC. M. levator labii super. alaeque nasi—Same. M. levator labii super and MM. zygomatici—No response to anode or cathode. M. levator menti—The CaCC is but slightly stronger than AnCC. M. buccinator—Normal, but feeble reaction. M. sterno-mastoid—Feeble reaction, but no RD. M. trapezius—Same.

Faradic Current.—M. frontalis—Very feeble response. M. orbicul. palpebr.—Response hardly perceptible. M. lev. labii sup. alaeque nasi—No response. M. lev. labii sup.—No response. MM. zygomatici—Response hardly perceptible. M. levator menti—Reaction very feeble. M. tra-

pezius-Reaction very feeble.

Conclusions.—The MM. trapezius and sterno-mastoid are markedly impaired in their nutrition, but as yet do not present the typical RD. The M. buccinator also does not present the typical RD, but its faradic contractability is totally lost; the latter circumstance makes the prognosis unfavorable for this muscle. The MM. levators labil and zygomatici do not respond at all to either current. The M. orbicularis palpebr. presents the beginning of RD. The M. frontalis is in better condition than the others.

Dr. William G. Spiller said that astonishing as was the return of function after anastomosis of nerves, it was not quite so surprising if it were remembered that when a motor nerve is divided and immediately reunited, there is not a reunion of the same fibers, but that different fibers united so that other nerve cells were brought into association with the nerve fibers.

The question, asked by Dr. Cushing, whether or not there will be degeneration of the central system of nerve fibers after lesion of the peripheral system, depends very much upon the age of the animal. In a young animal if the peripheral system of nerve fibers is destroyed the central portion of the system atrophies or does not develop as it otherwise would. If, however, the animal is well developed and an adult the change does not take

place to the same extent.

The question as to whether the operation done by Dr. Cushing is advisable or not is much easier to decide where the facial nerve has been cut, than it is in cases where there is facial paralysis, as from cold. In severe cases of this type, even where the reactions of degeneration are marked, there is often some return of power. In such a case, Dr. Spiller thought that it would be wise to wait at least three or four months before deciding to operate, but it must be remembered that in these cases of nerve anastomosis the prognosis depends very much upon whether or not the injury is recent.

Nerve Anastomosis in a Case of Anterior Poliomyelitis.—In this connection Dr. Spiller and Dr. J. K. Young exhibited a patient with infantile spinal paralysis on whom Dr. Young had performed nerve anastomosis. The patient was a child in whom the anterior tibial muscle alone was

paralyzed, this paralysis being the result of anterior poliomyelitis.

The operation having been decided upon, the most important feature was the route to be selected. From a careful dissection personally made, Dr. Young decided that the lateral route was the better one, and accordingly an incision 10 cm. in length was made downward from the head of the tibia in the long axis of the leg. The incision included the skin and superficial fascia. The deep fascia was divided upon a groove director, exposing the peroneal nerve. The nerve was followed down, and by separating the peroneus longus muscle three divisions were found, (1) the fasciculus of the nerves supplying the upper part of the anterior tibial muscle, (2) the anterior tibial nerve, (3) the musculo-cutaneous nerve, these divisions corresponding to those found in the cadaver. It was decided to take the upper division, of which there were four or five fascicula, and perforating the external division, the musculo-cutaneous, the former were united to the outer side of the latter by fine catgut sutures.

Great care was taken not to injure the musculo-cutaneous nerve any more than necessary, and the fasciculi of the nerves which supply the anterior tibial muscle at its upper part were pushed through the incision in the external musculo-cutaneous nerve without any attempt being made to separate the nerve fibers from the sheath. Small instruments were used,

and the nerves were handled as little as possible.

The nerves which were anastomosed were divided as high up as possible, so that there would be no tension upon them. The deep facia was not closed with sutures. The skin was united by interrupted sutures. Over the antiseptic dressing a plaster of Paris cast was applied to insure fixation of the limb.

At the time of presentation improvement in the action of the anterior

tibial muscle was observed.

Myokymia of One Side of the Face.—Dr. Spiller reported a case of this kind in which the movements were confined to the left side of the face. Bernhardt had reported a case of constant fibrillary tremor affecting the left side of the face. A similar case had come under Dr. Spiller's obser-

These were the only two cases that Dr. Spiller knew of.

Dr. A. A. Eshner remarked that while it was not so difficult to understand how in Dr. Cushing's case facial motor impulses, originating in the cortical motor centers, could be carried through the spinal accessory nerve, it was most difficult to comprehend why spinal accessory impulses should not be transmitted to the peripheral distribution of the facial nerve. It seemed to him that observations on nerve anastomosis, like that reported, threw some light upon the case recorded by Drs. Harte and Stewart of complete severance of the spinal cord by a bullet, in which immediate union by suture was followed after a time by a notable restoration of motor and sensory function.

A Case of Primary Neurotic Atrophy.—This case was reported by Dr. Alfred Gordon. (See p. 354.)

Dr. F. X. Dercum said that the remarkable point about this interesting case was the condition of the eye-ground and the nystagmus. It was an interesting question whether or not the toxic history played a rôle in the eye-ground changes.

Dr. Charles K. Mills said that the case looked like some that he had seen where there was association of progressive muscular atrophy with tabes, although the tabetic symptoms were not in this case thoroughly

developed.

Dr. Charles W. Burr thought that it was not wise to attribute the condition in this case to the excessive use of tea or coffee. This excess is very common while the disease in question is very rare. It was his opinion that it had never been proven that the use of tea produced any organic change in the nervous system. It seemed to him that Dr. Gordon's patient had disease not only of the peripheral nerves but also, at least, of the anterior horns of the spinal cord, and possibly also of the posterior part of the spinal cord.

Dr. Spiller remarked that the symptoms in Dr. Gordon's case had some resemblance to those of interstitial, hypertrophic and progressive neuritis of childhood of Dejerine and Sottas, and yet the case was lacking in some

of the essential features of this disease.

Dr. Alfred Gordon called attention to the fact that in reporting the case he had simply stated that it was one in which there was excessive indulgence in tea and coffee, but he had not said that this was the cause of the symptoms. He had reported in 1891 a case of tea intoxication with spinal symptoms. It might be that as result of this intoxication the nervous system was predisposed to various affections.

With regard to diagnosis he had called attention to the fact that the case was not of the classical type, that it was a mixed case. It shows how difficult it is at times to classify the progressive muscular atrophies.

Periscope.

AMERICAN JOURNAL OF INSANITY

(Vol. 59, 1903, No. 3.)

I. The Insane in Brazil. KIDDER.

2. A Contribution to the Chemistry of Nerve Degeneration in General Paralysis and Other Mental Disorders. CORIAT.

3. Dermatoses of the Insane. Winfield.

4. Report of a Case of Dementia Præcox with Autopsy. Dunton.

5. A Case of Abscess Diagnosed as Brain Tumor. GORDINIER.

6. A Case of Brain Tumor in a Woman Seventy-eight Years of Age. MADISON.

7. Acute Paresis with Report of a Case; the Clinical History and Pathological Findings. PATON and RUSK.

8. On the Motor Cortex. FARRER.
9. A Case of Metastatic Adrenal Tumors in the Left Mid-frontal and Ascending Frontal Convolutions. CHANNING and KNOWLTON.

I. The Insane in Brazil.—The government hospital at Rio de Janeiro is a modern, well-equipped institution with the latest appliances for the examination of patients, which is very complete, and the latest and best electrotherapeutic and hydrotherapeutic apparatus. The chronic insane are cared for in agricultural colonies. The hospital is comfortably furnished, except the dining rooms, where the furnishings are very scanty and poor. A training school for nurses is maintained. Mechanical restraint is not used, and the patients present no marks of violence. In some of the provinces the insane are cared for in religious charitable institutions which are of a low grade. The State of Sao Paulo has a good hospital with agricultural colonies attached. There are several private institutions at the Federal capital. Considerable attention is given to hydrotherapy. The death rate of the insane is large, being due in a measure to the tardiness in sending the patients to the hospital, many dying

within the first twenty-four hours after admission.

2. A Contribution to the Chemistry of Nerve Degeneration in General Paralysis and Other Mental Disorders.—The chemistry of nerve degeneration is at present limited to katabolic processes in the lecithin, the main constituent of the myelin sheath, and to decomposition of the axis cylinder, of which little is known. The decomposition products of lecithin are found chiefly in the cerebrospinal fluid, which latter varies under different conditions, like age and certain diseases, such as general paresis, and its color is changed under certain pathological conditions and by certain remedies; while normally alkaline, it may become acid in reaction under long-continued activity of the nervous system and is due to the lactic acid of degeneration. The toxicity of the cerebrospinal fiuid is increased in general paresis, owing to the cholin and other products of nerve katabolism and reaches its maximum after the epileptoid seizures and is believed to depend on cholin, which is the decomposition product of lecithin, and is the result, not the cause of the convulsive seizures. The knowledge of phosphoric acid metabolism is slight. In degenerative conditions, like general paresis, phosphorus has been found diminished in the nerve tissue and is a measure of the degeneration. A series of 34 cases suffering from different psychoses, in which the cerebrospinal fluid was examined and the technic fully given. These cases are further tabulated as to the chemical analyses, but the results do not bear abstracting and would have to

be quoted verbatim to be intelligible.

3. Dermatoses of the Insane.—No special relation of the various affections found are proven to have any connection with the mental disorder. Of the stigmata of degeneration hypertrichosis, on which great stress is often laid, was most prevalent in females, and a case is cited of melancholia, in which with the progress of the disease the hypertrichosis became marked, and as she improved mentally the hairs dropped off, leaving the skin as free as before the illness. Telangiectasis was found to be as prevalent in the sane as in the insane. The skin was found to be no more unctuous or odoriferous than in the sane. On the whole the insane are more subject to degenerative dermatoses than the sane, yet the cutaneous stigmata are found to be of little clinical value. A tabulated statement

of the findings concludes the paper.

4. Report of a Case of Dementia Praecox with Autobsy.—This patient was under observation four years and died of tuberculosis with the katatonic form of dementia præcox. It is of a young man of 22, clerk. Mother died of tuberculosis. The onset was sudden, patient became confused, refused food with the other symptoms peculiar to this disease type. A summary of the microscopical findings in the brain are as follows: slight cell change distributed over the entire brain, but most pronounced in the first frontal convolution. Cells present central chromolysis, an occasional slight pale yellow degeneration, slight cell atrophy, atrophy, discoloration and swelling of the nucleus; folding of the nuclear membrane and an endonucleolus. Deeper layers most affected, motor cells show slight changes like the above. Slight increase of neuroglia nuclei. Phagocytosis well marked and considerable cell degeneration. No change in the medullated fibers and no marked vascular changes. No cell shrinkage, so frequent in tuberculosis. An exhaustive autopsy report is given and the paper illustrated by four

plates showing the cell changes.

5. A Case of Abscess Diagnosed as Brain Tumor.—The case of a man of 52, married, farmer, with no hereditary history and perfectly well until two years ago before the final illness, when he had several attacks of indigestion. His final illness began with unilateral convulsion followed by reconsciousness, in which head and eyes first turned to the left, then whole boly convulsed and loss of consciousness. The effects of the attack were evanescent. Another attack occurred in 26 days and similar in character, except not followed by unconsciousness; numbness preceded neither. one was soon followed by another; the fourth occurred two weeks later without loss of consciousness. Movements of arm weakened and awkward after the last attack with gradual failure of memory, particularly for names and dates. No severe headache, but constant dull frontal pain. No facial symptoms except slight paralysis of central type, shown by obliteration of the left naso-labial fold and drooping of the angle of the mouth; left arm partly paralyzed and held semi-flexed. No reflex accessory derangements. Cerebration retarded, no aphasia. Patient operated and nothing indicative found and the wound closed. Patient died about three weeks later, after being delirious, followed by unconsciousness. An examination of the brain revealed a tumor-like mass involving the middle third of the right central convolution and extending forward and upward, implicating the bases of the superior and middle frontal gyri, measuring 4 cm. antero-posteriorly and 3½ cm. vertically, which was found to be an abscess, whose cavity extended forward into the frontal lobe, involving the centrum ovale beneath the bases of the superior and middle convolutions. The pus was thick and contained broken down brain tissue with micro-organisms of the colon group. The following conclusions may be drawn from this case: (1) The necessity of an exploratory puncture or incision in every apparently inoperable case when symptoms are strictly localized; (2) that typical Jacksonian epilepsy may be excited by a lesion in the white matter beneath the

cortex as well as upon it; (3) the ataxia of the arm may be explained either by involvement of the sensory fibers in the white matter of the inferior parietal lobule or by destruction of a part of the fibers of the frontocrebellar tract; (4) no disturbances of sensation and the Jacksonian attacks not preceded by numbness; (5) the paresis of the left arm following local convulsive seizures due to compression and destruction of the motor fibers of the arm area; (6) that no symptoms of compression existed; (7) this case shows the value of local convulsive movements in diagnosing local brain disease, also confirms the position of the centers for conjugate movements of the head and eyes, as for those of the arm. Also proves that local convulsive seizures may be excited by a lesion in the white matter beneath the cortex as upon it. Further that the motor cells are located ventral to the fissure of Rolando. Two photographs illustrate the article.

6. A Case of Brain Tumor.—This occurred in a woman seventy-eight years of age. The case of a brain tumor in an old lady of 78, which was unexpected during life, presents nothing of special importance as to diagnosis, owing to deficient clinical history in this respect. A careful autopsy was made and the brain thoroughly examined. Two photographs

accompany the article.

7. Acute Paresis with Report of a Case; the Clinical History and Pathological Findings.—A number of atypical conditions included under general or atypical conditions included and general paresis differing in symptomatology, as well as in the pathological changes. Only the cases which present the following features should be classed as acute paresis: (1) There should not be any prodromal period when the symptoms were of subacute or chronic type; (2) when death occurs in acute delirious excitement, the pathologist has to determine if there is a definite organic lesion sufficient to account for death; (3) when the pathologist has the pathologist has the pathologist parents as the pathologist parents as the pathologist process in the central persons. ological findings reveal a subacute or chronic process in the central nervous system, acute paresis is excluded. The case of a man is reported, whose disease ran its course in a few months. The family history was negative. No severe illness. Contracted lues several years ago. He first lost interest in his work, became nervous, worried, had digestive derangements. Before admission presented symptoms indicative of mental deterioration. Physical signs on admission practically negative, except marked speech defect. Memory very poor and unable to give any intelligent account of himself. Had hallucinations of hearing of a persecutory content. Gradually become more excited and noisy at times, his conversation disconnected and incoherent, no well marked grandiose ideas. About four months after admission had a series of convulsions. Had been extremely restless before, requiring restraint. After seizures the mental weakness progressed rapidly, and finally died in a little over four months after admission, only a few days after the convulsions. The authors' résumé of the case is as follows: "It is probable that cases of acute paresis are of greater rarity than has commonly been supposed. In order to form an accurate judgment as to whether a given case may be grouped under the forme foudroyante, it is not only essential that the subacute or chronic initial phase be excluded by the history of the case, but the acuteness or chronicity of the pathological process in the central nervous system must be carefully considered. The pathological findings reveal nothing that is essentially characteristic of the disease. We have noted in particular a nerve-cell alteration, which is in no sense pathognomonic. There is a general and not localized disappearance of fibers from all cortical areas. The neuroglia shows an increase of the cellular elements, particularly of the larger size spider cells, with but little, if any, increase of the fibers. The blood vessels, particularly the larger arteries of the cortex, are well filled with blood; in some cases this overfilling extends to the smallest vessels. Many round nuclei are found in the perivascular spaces. In most of the cortical areas, numbers of plasma cells are present. We have failed to find them in the tissue surrounding the vessels. The character of the changes in the various organs, as well as in the central nervous system, suggests a general intoxication. The vascular changes in the cortex are not sufficient to account for the degeneration of the nerve elements." This paper is illustrated by two plates showing the condition of the various nerve cells

8. On the Motor Cortex.—This paper will not bear abstracting, as it is largely a detail of study and investigation of the motor cortex. It at first gives a history of the development of cerebral localization. substance of the paper is best given in the author's own résumé: "The motor cortex occupies the middle region of the hemispheres, intermediate between the general and special sensory areas on the one side, and the specific association or psychic center on the other. This zone is the earliest to functionate, and the central sulcus forms to give increased room for its developing elements. It has been defined by the brilliant experimental work begun by Hitzig and Ferrier, by the clinical and pathological findings of Broca, Hughlings Jackson and a legion of subsequent observers, by the intricate myelogenetic method of Flechsig, and by the histological studies of Betz, Hammarberg and Cajal. Beginning with the observation of Hitzig that the motor area embraced nearly a half of the brain surface, its confines have gradually become narrowed. It has long been assumed roughly to include both central convolutions and the paracentral. Beevor and Horsley cast a suspicion upon the motor function of the postcentral gyrus. Flechsig discovered embryologic differences which he believed justified him in considering the postcentral the seat of general incoming sensory impulses, and the adjoining precentral the seat of outgoing motor Finally, Cajal described a specific fiber distribution in the precentral convolution which, he believes, serves to differentiate it as the motor type of cortex. That a motor type of cortex exists is abundantly proven. It is characterized by its unusual width dependent upon the marked development of the medium-sized pyramidal cell layer containing the specific plexus of Cajal, by the absence of a clearly defined granular zone, and by the presence of giant cells in the sixth layer with thicker and denser radial bundles and a richer development of the overlying tangential fibers, which are of maximum density in those portions of the convolution which contain the greatest number of giant cells, both being more conspicuous in the fissure in the lower half of the Rolandic zone, and on the summit of the convolution in the upper part of the motor Passing beyond the limits of the motor area, superiorly, inferiorly, anteriorly or posteriorly, one observes a gradual change in the cortical type, the third layer becoming narrower, the fifth wider, and the specific elements of the sixth disappearing. This change is typically illustrated in a cross section through anterior and posterior central convolutions. The paracentral presents both types of cortex, the transition taking place below the extremity of the fissure of Rolando, although no surface-marking determines the boundary.'

9. A Case of Metastatic Adrenal Tumors in the Left Mid-frontal and Ascending Frontal Convolutions.—A man of forty-eight had a tumor removed, involving the left kidney, which on examination proved to be a sarcoma of adrenal origin. He improved rapidly after the operation and was about to leave the hospital, when he had several severe epileptiform seizures, and in a few days another series of similar convulsions, which were immediately followed by weakened attention. Slight symptoms of paresis soon appeared on the right side. He soon displayed some hesitancy in speaking and often used the wrong word. His mental processes gradually became impaired in progressive manner, and the functions of the right extremities also became more impaired before death; he became helpless and his mental functions extremely dull, filthy in his habits and unable to appreciate his surroundings or condition. Was finally unable to swallow

fluids readily, could not express himself intelligently, manifesting an almost complete suspension of the mental functions. Finally he died in a semicomatose state with slight elevation of temperature, accelerated pulse and respiration. The autopsy revealed a tumor of 2.5 cm. in its greatest diameter in the left temporal region. Its exact location was found to be in the posterior inferior part of the swollen midfrontal lobe, just anterior to the precentral fissure and 4.5 cm. above the beginning of the fissure of Sylvius. A second smaller tumor was found in the ascending frontal lobe, between the precentral fissure and the fissure of Rolando, measuring 8 mm. in diameter. Two similar nodules were found in the left lung, being composed of large cells imbedded in the meshes of a rather delicate connective tissue stroma, i. e., like that of carcinoma. The cells of large size and of epitheleoid character and protoplasm of delicate reticulated appearance. Two plates show the appearance of the superior surface of the brain and a vertical section through the site of the tumors.

LE NEVRAXE

(Vol. 4, 1902, No. 2.)

6. Case of Lesion of Cauda Equina. Contribution to Study of Centers of Micturition, Defecation, Erection and Ejaculation (concluded). A. Van Gehuchten.

7. Experimental Study on the Innervation of the Larynx of the Rabbit.
F. DE BEULE.

8. Gemmules in the Nerve Cells. S. Soukhanoff.

6. Cauda Equina Centers.—Van Gehuchten completes his study begun in the last number of this journal. He presents a very full analysis of the work done in the centers of micturition, defecation, ejaculation, etc., and gives in great detail his results in a patient with a severe transverse lesion of the cauda. The paper is extensive, and his conclusions can be here given in fragments only. He believes with Müller that the primary centers of micturition, defecation, erection, and in part also of ejaculation are largely localized in the sympathetic ganglion of the hypogastric plexus. To these centers, however, should be superimposed those located in the conus. These, in their turn, are influenced by the superior centers of the cerebral cortex.

The sympathetic centers can functionate in a manner completely independent of the cerebrospinal centers. This probably takes place, for instance, in infants in the first months of life. Then the bladder and rectum empty themselves more or less regularly automatically at more or less regular intervals, and erection may take place. This also takes place in adults in lesions of the conus or of the inferior roots of the conus.

The medullary centers, however, exercise an influence over the sympathetic centers. Thus, in infancy, cold applied to the feet may induce a reflex micturition and similar skin reflexes in adults may stimulate vesical activity. The cortical influences are of the voluntary order and are acquired largely by the educative processes. In cord lesions their cutting off temporarily disarranges the bladder, rectal and other functions, but they may recuperate and come back to their primary functional activity.

7. Innervation of the Muscles of the Larynx.—F. de Beule gives a lengthy historical and experimental study on this subject, treating the sub-

7. Innervation of the Muscles of the Larynx.—F. de Beule gives a lengthy historical and experimental study on this subject, treating the subject under three main heads: (a) The distribution of the laryngeal nerves; (b) the part played respectively by the pneumogastric and the spinal accessory in the muscle innervation, and the character of their fibers; (c) the determination of the medullary center of the laryngeal nerves. So far as the muscular distribution of the laryngeal nerves is concerned de Beule favors Linget's views, holding that (1) Exner's views of a double nerve supply and from the nerves of both sides is not true; (2) Longet's view

is the correct one with the addition of the part played by the middle laryngeal nerve; (3) the crico-thyroid muscle is innervated by both the superior and middle laryngeal nerves; (4) all the other muscles are supplied by the recurrent laryngeal; this distribution is unilateral, save perhaps for the arytenoid muscle. Chapter II. of his research takes up the question of the motor fibers of the vagus and spinal accessory and the relative part played by each in the innervation. His conclusions reached after an elaborate argument, historical, physiological and pathological, are (1) that interrachidian tearing of the spinal accessory nerve is followed by Wallerian degeneration in the corresponding inferior laryngeal nerve only, and a limited number of its fibers at that, from which he concludes that the superior laryngeal and some fibers of the recurrent are derived from the pneumogastric; (2) isolated rupture of the bulbar roots of the pneumogastric is followed by immediate cessation of the respiratory movements of the corresponding vocal cord, and stimulation of the common trunk of the vagus, in these animals that had survived for a period of three weeks the intracranial rupture of the spinal accessory, gives rise to movements of the glottis. On the question of the bulbar centers de Beule claims that the dorsal vago-spinal accessory nucleus is the nucleus for the innervation of the larynx. The ganglionic centers for the motor fibers of the superior laryngeal nerves are in the lower two-thirds of the dorsal nucleus of the pneumogastric, in which region portions of the cells of origin of the recurrent laryngeal are also found. The spinal accessory is located in the upper three-fourths of the same nucleus.

8. Gemmules.—Soukhanoff continues his studies on gemmules, in one instance using the spinal cord of the guinea pig. He finds gemmules on some of the cell bodies of the spinal cord. In an old animal the gemmules were so numerous that they completely covered the cell outline between the dendrites. In newborn children he has found them, and in the posterior horns of an adult of fifty-two years. He holds that they are not artefacts,

but contributes nothing new concerning their possible function.

ELLIFFE.

MISCELLANY.

A Case of Tumor of the Cauda Equina. Franz Volhard (Deutsche med. Wochenschrift, xxviii. 33, 1902).

The author reports a rare case, and one which is of importance for topical diagnosis. The patient, a male, and a teacher by occupation, observed early in the year 1898 that he was obliged to urinate more often and with more difficulty than usual, and that much more voluntary effort was required during defecation. In the same year a peculiar feeling of pressure manifested itself at the lower extremity of the spine, which persisted. In 1899 impotence occurred; in the summer the left foot began to waste as well as the leg, and the fatigue in the extremity caused the patient to limp. There never was any pain in the limb. The dull feeling of pressure above mentioned still persisted and became aggravated upon bending the body, coughing, climbing stairs, and upon pressure, although there was never a definite appreciation of pain. In 1900 the symptoms gradually increased. The left leg felt heavier, and the movements of the toes ceased. After treatment in one of the German watering places during 1901 the patient felt considerably better. He could walk much better, the bladder could be emptied with much more ease, and the impotence markedly decreased. This improved condition continued for almost three months until the end of the year 1901, when the symptoms again became aggravated. In addition to the previous symptoms the patient became greatly annoyed by an excessive thirst, dryness in the mouth and nose, loss of appetite and nausea. The feces became so dry that the patient often had to extract them with the fingers. Examination of the patient showed the following: Above the symphysis the bladder could be palpated as a

large tumor extending to the umbilicus. Examination of the internal organs of the thoracic and abdominal cavities showed nothing abnormal. The left leg, particularly the lower portion, was from 1 to 2 cm. thinner than the right, the left ankle joint relaxed, and the muscles of the calf limper than those of the right. There was no swaying with the feet in juxtaposition. The knee-jerk on both sides was very prompt, and the cremasteric reflex very pronounced. The Achilles reflex was only just perceptible on the right side, but could not be obtained upon the left. The plantar reflex was very much diminished on both sides. Examination of the hip-joints showed that on the left side external rotation was easily performed, yet markedly less than on the right side, while internal rotation could be forcefuly performed on both sides. Extension of the leg from the knee-joint could be easily performed on both sides, but flexion was weaker on the left side. Dorsal flexion of the feet was less pronounced on the left side. No zone of anesthesia could be detected. Only the most careful tests elicited here and there a diminished or absent appreciation of tactile impressions and in the following areas: (1) At the area corresponding to the sacrum, although the latter was not painful on pressure. (2) Directly above the knee on the left side. (3) A circular area at the external aspect of left leg. In these areas, both tactile and temperature appreciation were absent. There was no real pain, but a feeling over the sacrum described as "miserable, and pressing as if a wedge were being driven into the tissues." Electrical excitability was diminished quantitatively in the paretic muscles, but no reaction of degeneration could be The author calls particular attention to the fact that in this obtained. case the diagnosis was confined to a lesion of the conus or the cauda equina, based upon accepted topical diagnosis. The location of the lesion was of particular importance for therapeutic purposes. An appended table offers the explanation that the lesion could be inferred as existing either in conus or in cauda equina. Yet the absence of sensory irritability is in contradistinction to the symptoms in lesion of the cauda equina. But the diagnosis of a tumor of the cauda equina was made, because it explained the symptom-complex rather than individual symptoms, and because a tumor of the conus would have caused extensive symmetrical paralysis in such a time. It was intended to open the spinal column, but the general condition of the patient continued to grow worse until he died during a uremic attack. The autopsy showed a glioma directly under the conus, which not only crowded the posterior roots, but which compressed the anterior ones against the spinal column, therefore, also, explaining the slight sensory disturbances. DINKELSPIEL (Philadelphia).

Book Reviews.

LA LOGIQUE MORBIDE: L'ANALYSE MENTALE. By N. VASCHIDE and C. VURPAS, preface by M. TH. RIBOT. Société d'Editions Scientifiques et Litteraires, F. R. de Rudeval et Cie., Paris, France.

This small volume of 260 pages is a valuable contribution to the subject of morbid introspection. Many there are who, interested in psychological problems, are wearied to death by the self-analysis of their patients. This work is one of the few of its kind that has come to our attention and seeks to study this type of mental activity as an entity and to analyze

its various features.

The authors propose a classification which has many interesting They first separate the types of mental activity into those with diminished mental analysis and those of exaggerated mental action. class under A, general paralysis and dementia as due to enfeeblement of mental images; idiocy and imbecility as due to imperfection of the association of images and of ideas. Mania presents a diminished type of mental analysis by reason of a too rapid succession of ideas in the field of consciousness; melancholia by reason of a profound perturbation of representation of mental images and ideas; and mental confusion as due to a disarrangement of association of images and of ideas; systematized delirium in which paranoid forms of mental disease may be classed is characterized by a fixity and uniformity of the direction and rendition of mental analysis.

The book is more suggestive than convincing, but is well worth the JELLIFFE.

reading.

The Mind of Man. A Text-Book of Psychology. By Gustav Spiller. The MacMillan Company, New York.

The science of mind, the author says, must revolutionize the whole

of philosophy. He holds that the determination of the nature of the mental processes and the nature of man will set at rest once and for all those discussions that have raged around a unitary conception of the universe. Physical science and mental science will then no more form two independent and hostile camps, and speculative metaphysics will cease to

exist, handing over many of its interesting problems to science.

The author here gives us a volume of some 500 pages, divided into three parts, in which are considered first, the methods of the study of psychology, the general analysis of the individual features, and a special synthesis of the various forms of classification as applied to psychological

phenomena.

In an attempt first to place this book before our readers that they may understand its general scope and limitations, we may say that the author has followed the workers in the lines of general philosophy and meta-physics more than he has those of the workers in the realm of so-called physiological psychology. This has its advantages as well as its disad-vantages. Thus, on the question of introspection, after giving a complete discussion of the different opinions of various writers, he says that although, almost without exception, the testimony directly or by implicacation against introspection as a good psychological method is crushing, his reply is as follows: "Retrospection is of necessity introspection, and if, therefore, introspection be impossible our minds are absolute blanks."

The introductory chapter on method is very interesting. After roaming the general field over, discussing many authors in their method of

approach to the general problem, he passes in review the various psycho-

logical schools, the reflective, the physiological, etc.

He holds that in each instance it has been found that the positive acquirements have been scanty to an undue degree, and this he attributes to the fact that psychologists have not, as a rule, put themselves in close touch with the scientific method.

In part II., which makes up the greater part of the book, the subject of general analyses is taken up, and much stress is laid upon attention in its relationship to sensation. The author says that sensation, images and feelings do not exist apart from attention. He then takes up the differences of attention in the normal waking state, deliberate attention, abnormal attention, and the expanding and contracting of the field of attention.

He identifies attention with cerebral change. Willing is divided from attention, and attention from willing, in that attention is always change while volition is not change, but only points to it. The relation between these two is that between being and becoming. He thus takes an entirely new point of view on this question.

In chapter III. the question of habit, memorizing of facts, and the development of automatism is taken up. Judgment, early education, and

the origin of thought is very clearly summarized.

Chapter IV. deals with systems as need-satisfying, and here the general methods of thought, different facts of the combination of thought are taken up. Expressed in the author's own words he says: "Owing to the nature of the human structure, as determined by natural selection, needs tend to arise and to satisfy themselves, the methods of satisfaction being outlined in the normal and adapted organization. Under ideal conditions, given the need, satisfaction should follow at once, in which case there would be but one step in every process. Since, however, the human structure is imperfectly adjusted to its environment, the process of satisfaction or readjustment is frequently long, complicated, and unsuccessful, and that these more or less prolonged attempts at satisfaction or readjustment, embracing observation, memory, action and thought in every form, we call the process of need-satisfying."

In part III. special synthesis is taken up, and he believes the business

In part III. *special synthesis* is taken up, and he believes the business of psychology to be an inquiry into the following facts: The nature and growth of needs; the range, the effectiveness, the liability to deterioration, to improvement or breakdown, which is to satisfy the needs: the process of satisfying needs; and the distinguishing forms of such processes. This is the generalization with which the author concludes his final chapter.

There is a distinct freshness and vigor in the author's presentation which jostles one as it were from the ordinary ruts of introspective psychology, although the general tendency is in this line. We can recommend it most heartily to our readers as something ingenious, fresh and suggestive.

Brown.

The Evolution of Man and His Mind. A History and Discussion of Evolution and Relation of the Mind and Body of Man and Animals. By S. V. Clevenger, M.D. The Evolution Publishing Company,

nicago.

The author is known for his many works dealing with comparative physiology and psychology, spinal concussion and medical jurisprudence of insanity; and as one of the founders of the JOURNAL OF NERVOUS AND MENTAL DISEASE it gives us pleasure to welcome the present extremely interesting work. There are twenty chapters, in some 600 pages, which run from the consideration of the earliest man to the study of the highest types of social organization.

In the early chapters the author discusses prehistoric man, those of the stone age, the dwarfs, the Turanians, the Africans, the Malays, the Aryans and the Semites. He dips liberally into the recent discussions of Babylonian civilizations and then runs rapidly through the middle ages.

The chapter on evolution is well worth reading and while there is very little that is new, there is much to think about and to admire, particularly in its presentation. One of the most interesting chapters is that on language and the primary sensations of hunger and love, and they are thoroughly taken up. The atavistic tendencies of the latter feeling are developed fully.

Chapter XII on the evolution of the brain, chapter XIII on the evolution of the senses and feelings, and chapter XIV on the instincts and emotions, make a unique series of heterogeneous facts brought into correlation

by an ingenious method of arrangement.

Finally the author discusses the general problem of sociology in a general manner. He does not attempt a complete monograph of all of the various phases of the science of sociology but gives a number of scraps of interesting details.

This work is one that can be picked up in one's odd moments and from it can be gathered a rich store of useful information and pleasing fancy.

We commend it most highly to our readers.

Jelliffe.

Mews and Motes.

THE Revista Freniatria Españole is a new journal devoted to psychiatry published in Spain at the beginning of this year.

The Italian Senate has approved the application for the construction of a new building for the psychiatric clinic of the University of Pavia and has authorized the expenditure of \$40,000 for the construction of the building and has also appropriated \$12,500 for the care of patients.

The National Asylum for Insanity of Rio de Janeiro, Dr. Juliano Moreira, professor of psychiatry and neurology on the Faculty of Bahia, and co-editor of the Gazeta Medica of Bahia, has been appointed Director of this large asylum. The institution is to be enlarged shortly by the addition of new buildings, the ground for which, adjoining the present property, has already been purchased. The erection of these new buildings will increase the capacity of the hospital to 1,000 beds instead of the present 900 beds. Funds for the erection of the buildings are available which will be sufficient to provide for a modern equipment of the new wards. Plans for the new epileptic ward are being prepared. It will be detached from the other buildings. The new children's ward was inaugurated with the name of Pavilhas Bourneville. Prof. Juliano Moreira, the new director, one of the most prominent alienists of South America, is author of several monographs in important points of psychiatry.

At a recent conference between Governor Odell and the New York State Commission in Lunacy plans were made for the erection of several new asylums for the insane and for the extensive improvement of the existing institutions, at a cost exceeding \$1,000,000. The most important provision is for the erection in Washington county of a large hospital for insane, at a cost of \$500,000. Accommodations will be provided for 1,200 patients, and arrangements will be made for large increases in a few years. It is also proposed to erect a psychopathic hospital in New York City for new cases picked off the streets. This institution will do the work of the Bellevue insane pavilion on a much larger scale. It will cost \$250,000. Provision will be made for converting the Bedford House of Refuge for Women into an insane asylum, at an expense of \$150,000. Tuberculosis pavilions for several state hospitals will cost \$90,000. New boiler houses, kitchens and other departments at state hospitals will be provided for by an appropriation of \$300,000.

Dr. Arthur H. Harrington, formerly superintendent of the Danvers, Mass., Hospital for the Insane, has taken charge of the New York Eye and Ear Infirmary, at New York.

A 16,000 wing is to be added to the County Insane Asylum, at Smith's Landing, N. J.

THE Clifton Springs, N. Y., Sanitarium management have found it necessary to erect a new bath house and otherwise enlarge and improve that institution in order to care for the increasing number of patients.

The sum of \$79,200 is asked for enlargements and improvements at the Middletown, N. Y., Homeopathic State Hospital. The sum of \$25,000 is asked for solariums, \$12,000 for a female hospital ward, \$4,500 for additional heating apparatus, \$3,500 for mechanical stokers, \$15,000 for congregate dining room, \$15,000 for another pavilion, etc.

It is stated that a new sanitarium will be established at Amityville, N. Y. It is to be in charge of Mr. Gilbert P. Williams, former superintendent of the Brunswick Home.

Dr. Stocking, the assistant superintendent at Agnews, Col., State Hospital, has been appointed superintendent, vice Dr. J. A. Crane, resigned, while Dr. Marvin, who was second assistant at Agnews, has been appointed assistant.

THE STATE OF RHODE ISLAND is expending nearly \$1,000,000 in the enlargement of the State Hospital for the Insane, at Cranston.

THE CONTRACT has been let for the erection of a \$25,000 annex to Dr. Street's Sanitarium, at Vicksburg, Miss. It is to be completed by June 15.

THE PLANS have been completed for the erection of the new Resthaven Sanitarium, at Waukesha, Wis.

THE North Dakota State Hospital for the Insane, at Jamestown, is to be enlarged by the erection of a new hospital building and a cold storage building.

THE ERECTION of a \$12,000 hospital at the County Asylum, at Nashville, Tenn., has been recommended by the board of commissioners.

The New \$75,000 building for the Waukesha Springs Sanitarium Co., at Waukesha, Wis., is to be completed about June.

F. D. BAYLESS is erecting a sanitarium at Prairie du Chien, Wis.

St. Agnes' Sanitarium, at Baltimore, Md., is to be extensively improved and enlarged.

Dr. Edwin S. Vail is erecting a new \$20,000 sanitarium at Thompsonville, Conn.

THE BATTLE CREEK SANITARIUM has opened a branch at Louisville, Ky.

Dr. Charles Lang, of Meridian, N. Y., will erect a sanitarium at Pine Bluff, N. C.

THE POPE SANITARIUM, at Louisville, Ky., has been sold to the newly organized Pope Sanitarium Co., for \$100,000.

The legislature has appropriated \$80,000 for improvements at the State Hospital for the Insane, at Yankton, S. D.

Plans have been filed for alteration to the old Amusement Hall on Blackwell's Island, New York, opposite the Metropolitan Hospital. After the alterations are completed the building will be used as a convalescent hospital. William Flanagan, Jr., of the Department of Charities, is the architect. The cost is placed at \$10,000.

Shepard's Sanitarium, of Ohio, has been successfully conducted for fifty years without change of proprietor or management. With this excellent record Dr. William Shepard retired January I, 1903, from active work and is now looking after his other varied interests. He will be succeeded by two corporations, The Shepard Sanitarium Company, for chronic and nervous diseases, and the McMillen Sanitarium Company, for mental diseases. More than a dozen well-known physicians of Central Ohio and vicinity are the stockholders in one or both of these sanitariums. A close relationship will be continued between them. Dr. W. E. Postle, of West Jefferson, O., will succeed Dr. Shepard, while Dr. Bishop McMillen will continue as superintendent of the sanitarium for mental diseases.

THE CONTRACTS were let early in February for the erection of eight new cottages for the Gallipolis, Ohio, State Hospital for Epileptics, to cost about \$120,000.

Extensive improvements are to be made this year at the Danvers, Mass., State Insane Hospital. A group of frame cottages, to accommodate one hundred patients, will be erected, as will also a dining room and kitchen and four wards and a heating plant.

THE NEW State Institute for Feeble-Minded, at Grafton, N. D., has been completed.

American Neurological Association Banquet.—At the last banquet of this Association held in Washington in May, some delightful fun was contributed by the members. G. P. W. contributed his annual song; J. C. cast an elaborate horoscope of many of the members, the dire forecast is not here reprinted lest the insurance rates in New York, Boston and Philadelphia should be disturbed. J. E. C. recited a fable and gave forth the following news item. Many others contributed to the jollity of the occasion.

It is rumored that Dr. M. P. is soon to publish a continuation of his delightful pipe-dream, otherwise known as the Genealogy and Development of the Misses Beauchamp. It will bear the imprint of the Society for Spookical Research and will have for title: The Pill Family Beauchamp. The dedication is to the late lamented Baron Munchausen. Mr. Charles Frohman has secured the dramatic rights.

A NEW AND UNIFORM edition of the works of Dr. J. C. is to appear in the fall. It will be done into English by the author himself and will contain no words of over twelve syllables. Since the apearance of Dr. C.'s books, Messrs. Flunk and Waxemall have been enabled to add over seven thousand new words to their peerless Standard Dictionary.

Dr. P. C. K. denies the rumor that he is writing a book on Sex. Perv. He admits however that his extensive reading on this subject has for its object a short story dealing with literary and artistic circles, soon to appear in the Smart Set.

DR. W. G. S. is spending his leisure moments in the preparation of a monograph entitled: A Description of Two Newly Discovered Nerve Fibers in the Genito-Spinal Tract of the Common or Garden Flea.

It is rumored that Dr. H. P., of Salem, Mass., has another nervous setions. A fresh artisle may therefore he confidently expected from the

patient. A fresh article may therefore be confidently expected from the prolific pens of Drs. W. and P., who will doubtless see the case in consultation. The healthy young women of the Normal School of Gymnastics will probably lend their physical charms to the construction of the paper, (G. E. C.) as usual.

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TABLE OF CONTENTS

ORIGINAL ARTICLES

The Geographical Distribution of Insanity in the United States. By William A. White, M.D257
The Changes Found in the Central Nervous System in a Case of Rabies with Acute Mental Disturbance. By Charles Lewis Allen, M.D280
Psychomotor Hallucination and Double Personality in a Case of Paranoia. By William Pickett, A.M., M.D285
SOCIETY PROCEEDINGS
New York Neurological Society. January 6, 1903291
Philadelphia Neurological Society. January 27, 1903295
CHICAGO NEUROLOGICAL SOCIETY. January 22, 1903298

Continued on Page IV

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TABLE OF CONTENTS II—Continued from page II

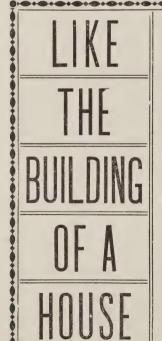
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1, Jan.								

Brain. Vol. 25, 1902, No. 3, Autumn.

1. Degeneration Following Lesions of Retina in Monkeys (304). 2. Arterial Supply in Anthropoid Apes (305). 3. Experiments on Conductions of the Spinal Cord Rendered Anemic by Compression of the Aorta (305). 4. Trunk Fits (306). 5. Hereditary Aphasia (306). 6. External Spinal Pachymeningitis (306). 7. Central Cell Changes in Chronic Acoholism (306). 8. Brain Defects (307). 9. Pain....307

Continued on page VI



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TABLE OF CONTENTS III—Concluded

MISCELLANY

The Pathological Anatomy of Chorea Minor (307). Clinical Studies and Deductions Concerning Family Myoclonia and Allied Diseases (308). Ueber neuere klinische Gesichtspunkte in der Lehre von der Arteriosclerose (308). On the Permanent Care of the Feeble-Minded (308). Three Cases of Involuntary Movements in Locomotor Ataxia (309). An Interesting Case of Paraplegia with Recklinghausen's Disease (310). Contributions to the Tuberculous Diseases of the Pons (310). The Surgical Importance of Influenza (310). Surgical Treatment of Hemorrhagic Pachymeningitis (312). Subdural Interposition of Rubber Tissue Without Removal of the Gasserian Ganglion in Operations for Tic-Douloureux (312). The Changes in the Spinal Cord and Medulla in Pernicious Anemia (313). Heredity of Mental Disease in General (313). How Not to Be Nervous (315). The Diagnostic Symptoms of Tumors of the Brain (315). Epilepsy: Its Psychopathology and Medico-Legal Relations (316). The Minute Anatomy of Erythromelalgia......317

BOOK REVIEWS

Les Obsessions et la Psychasthenie

NEWS AND NOTES

319

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See Index pp. xii, xvi



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LIST OF PATRONS TO DIRECTORY

Anderson, Dr. Winslow—St. Winifred Hospital	9
Barnes, Dr. F. H.—Gray Towers	18
Bond, Dr. G. M.—Yonkers	16
Brownrigg, Dr. A. E.—Highland Spring Sanatorium	15
Broughton, Dr. R	14
Bryant, Dr. F. A.—School for Stammerers	10
Burr, Dr. C. B.—Oak Grove, Flint, Mich	8
Butler, Dr. Geo. F.—Alma Sanatorium	12
Channing, Dr. Walter—Private Hospital for Mental Diseases	10
Coe, Dr. Henry W. and Gillespie, Robert L.—Mt Tabor Sanitarium	14
Coon, Dr. G. F., Oxford, Ohio	22
Crothers, Dr. T. D.—Walnut Lodge Hospital	14
Cukier, X.—Hydriatic Institute	19
Dewey, D. R.—Wauwatosa, Wisc	8
Dold, Dr. W. E.—River Crest	ΙI
Dunham, Dr. S. A.—Buffalo	19
Edes, Dr. Robert T.—Warren Chambers, Boston	13
Fitch, Dr. A. L.—Cedarwild Sanitarium	17
Ferguson, Dr. James Francis—Falkirk	9
Fletcher, Dr. W. B	9
Foster, Dr. C. A.—Grandview Sanitarium	16
Gorton, Dr. Eliot—Fair Oaks	17
Gundry, Dr. Richard F.—The Richard Gundry Home	20
Hallock, Dr. F. K.—Cromwell Hall	ΙI
(CONTINUED ON PAGE XVI.)	

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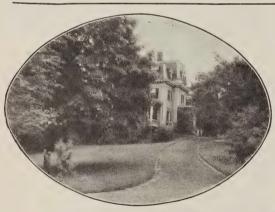
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Directory for Private Institutions Continued from page xii.

Directory for Frivate institutions page xii.	
Hitchcock, Dr. H. M.—Crest View Sanitarium	14
Jackson, Dr. J. Arthur—The Jackson Sanatorium	13
Kellogg, Dr. Theo. H	10
Kindred, Dr. J. J.—Astoria, L. I	16
The state of the s	13
	15
Mattison, J. B	II
McFarland, Dr. D. W.—Hall-Brooke	ΙI
Meyers, Dr. Campbell.—Deer Park, Ont	21
Murden, Miss L. E	13
27 1 7 77 1 77 24 1 1	14
77 79 79 77	9
	38
	13
Perry, Dr. J. Frank—Blue Hills Sanitarium	17
Pettey, Dr. Geo. E	17
Prout, Dr. T. P.—Fair Oaks	17
	ΙI
Punton, Dr. John—Kansas City, Mo	15
	8
Ruland, Dr. F. D.—Westport Sanitarium	ю
Savage, Dr.—Gymnasium	20
Sears, Dr. C. A.—Grand View	15
Skinner, Dr. C. E.—Newhope Sanitarium	21
	14
Stearns, Dr. W. G.—Lake Geneva	19
	9
Sylvester, Dr. W. E.—College Point	
Wilsey, Dr. O. J.—Long Island Home	18
Yawger, N. SBurn Brae	10





×

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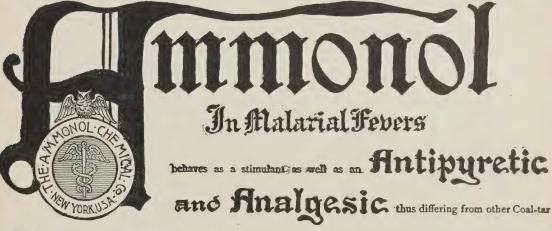
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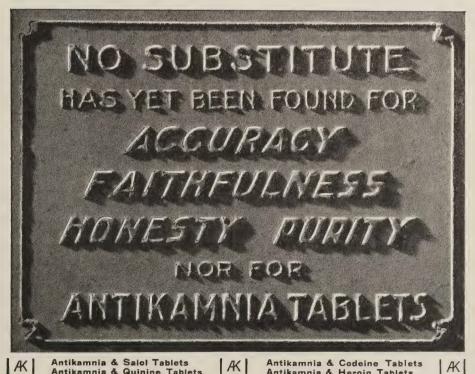
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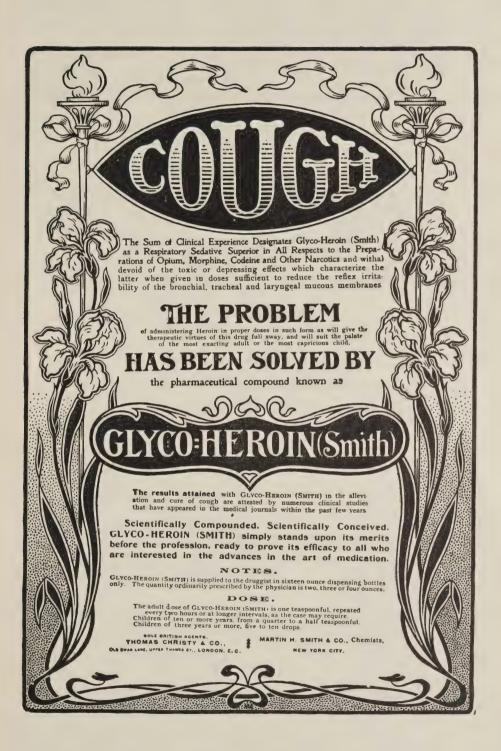
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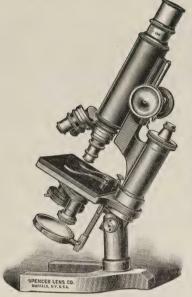
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